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# SOIL CONSERVATION

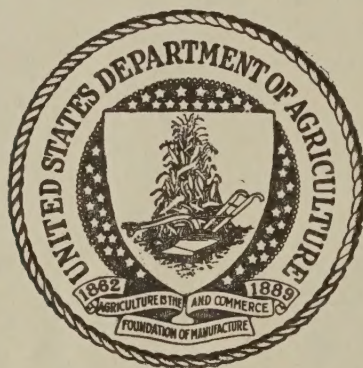
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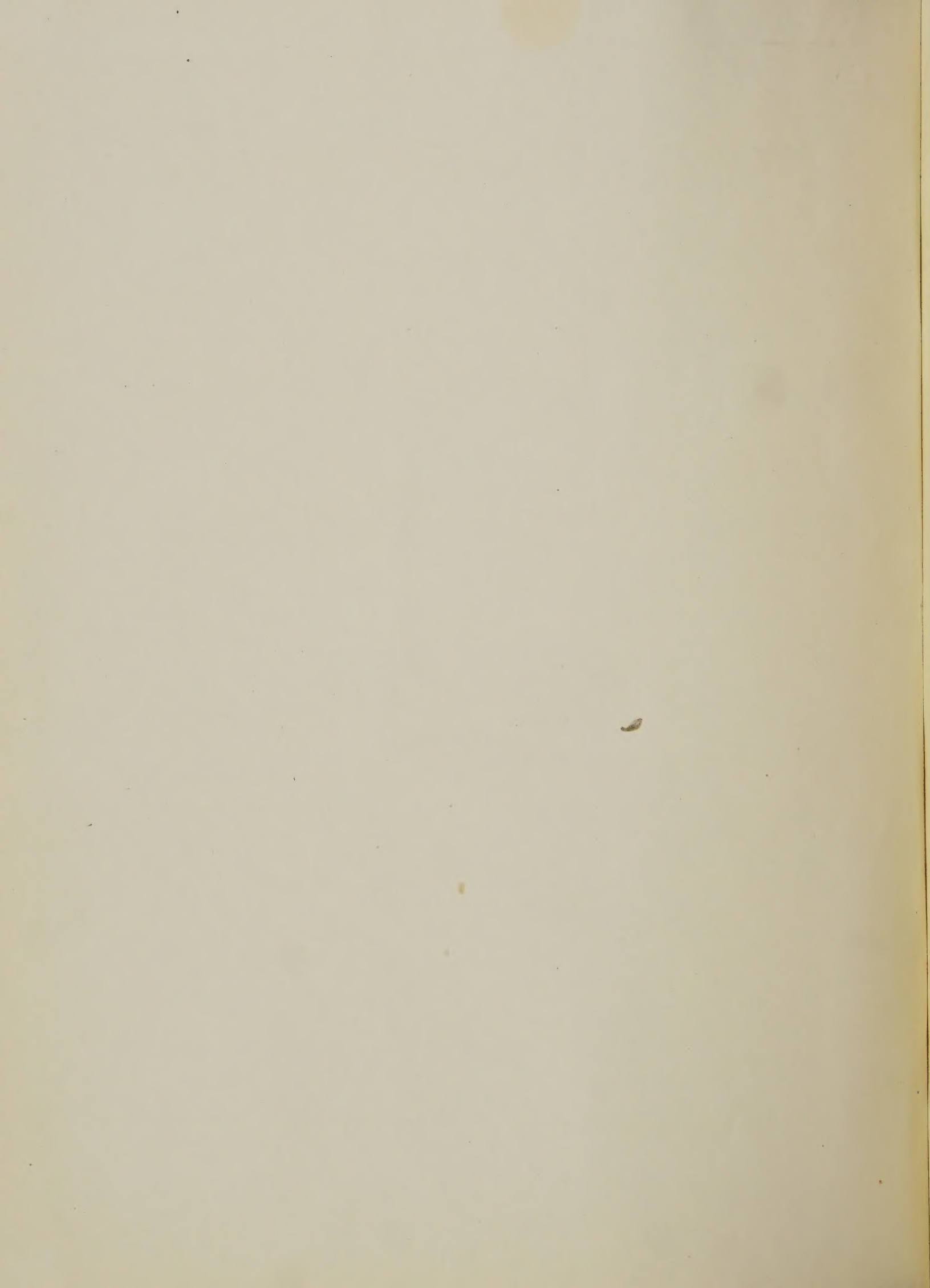
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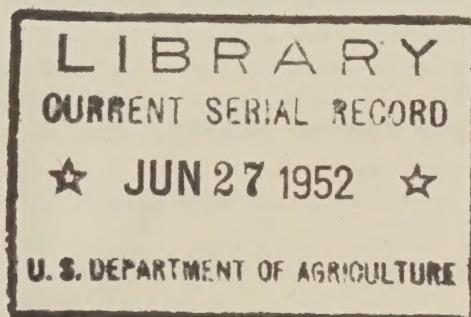
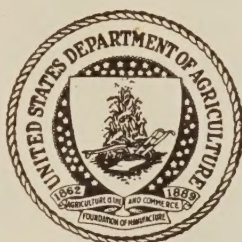


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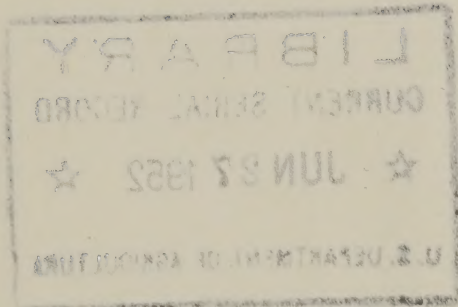


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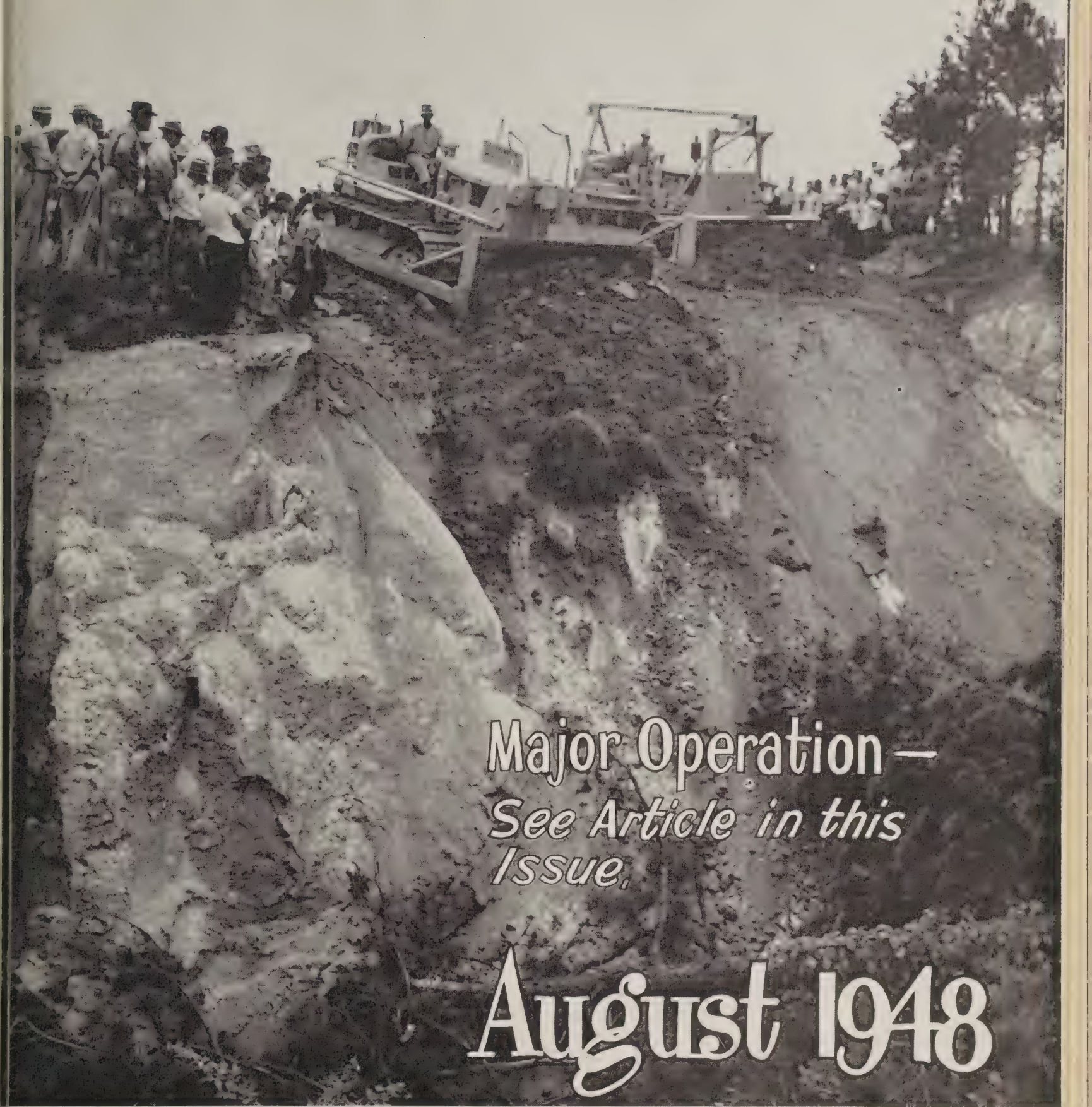
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Major Operation —  
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August 1948

# ≡ SOIL CONSERVATION ≡

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WELLINGTON BRINK

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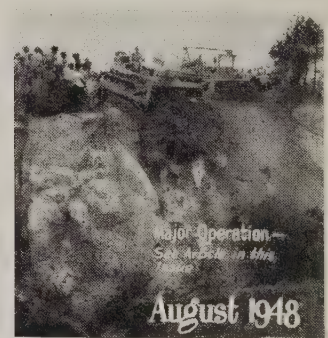
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**WE GET AROUND.**—The extent to which SOIL CONSERVATION Magazine has become a world traveler is indicated by the 420-odd paid subscriptions from foreign countries. Subscribers outside the United States pay more than those inside our borders, but the number keeps growing. Scientists, teachers, and government offices predominate.

Among the addresses are Afghanistan, Algeria, Argentina, Australia, Belgian Congo, Belgium, Brazil, Bulgaria, Burma, Canada, Chile, China, Colombia, Costa Rica, Cuba, Czechoslovakia, Denmark, Dominican Republic, Egypt, England, Ethiopia, Finland, France, French Indo-China, French West Africa, Greece, Guatemala, Haiti, Hawaii, Holland, Hungary, Iceland, India, Iran, Iraq, Italy, Kenya, Lebanon, Liberia, Luanda Angola, Mexico, Morocco, Mozambique, Netherlands, Newfoundland, New Zealand, Nigeria, Northern Rhodesia, Norway, Pakistan, Peru, Philippines, Poland, Puerto Rico, Rumania, Russia, Saudi Arabia, Siam, South Rhodesia, Spain, Sudan Africa, Sweden, Switzerland, Syria, Tasmania, Trinidad, Tunisia, Turkey, Union of South Africa, Venezuela, Virgin Islands, West Indies, Yugoslavia.



**THE COVER.**—This great canyon on the Carlyle-Blakey farm in Georgia disappeared on May 12. It took giant power to do the job. Behind the power of machine was the power of planning and good technique. Thousands of conservation-minded citizens watched with awe as a whole farm was remodeled along conservation lines between dawn and dusk. The story of this modern miracle is well told in text and pictures, beginning on the page opposite. (Photographs by Hermann Postlethwaite.)

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The huge crowd was widely scattered. A small part of it watched the making of this farm pond.

# RECORD CROWD SEES BIRTH *of* NEW FARM

By BARRINGTON KING

SIXTY THOUSAND people saw an old farm take on the new look down in the Oconee River Soil Conservation District in Georgia.

It was the biggest of a long series of farm "face liftings" that have been held throughout the country. Six months of planning preceded the smooth-running demonstration. More than a million dollars' worth of farm equipment was in operation. Seven hundred persons, including machine operators and 300 GI agriculture trainees, helped with the various jobs.

NOTE.—The author is chief, regional information division, Soil Conservation Service, Spartanburg, S. C.

Probably the only thing that hadn't been anticipated by those who put on the show was the size of the crowd. Parking space had been optimistically provided for 14,000 cars, but the space soon filled up and the cars overflowed to adjoining areas.

The Georgia highway patrol checked 15,000 cars moving bumper to bumper up to 1 p. m. on the designated route from nearby Winder, Ga. It was estimated that 1,000 additional cars came in by the back way over a dirt road. At four people to a car, that would have exceeded the generally accepted figure of 60,000 visitors.

Probably most of the people who visited the Carlyle-Blakey farm on May 12 felt as Carlyle did



when he looked out over the milling throng and the hundreds of pieces of farm equipment at work on their assigned jobs:

"I thought it was going to be big, but I didn't expect anything like this."

Operations continued without let-up through the lunch hour and speaking program that followed on top of a hill overlooking the farm. Chief H. H. Bennett of the Soil Conservation Service, one of the feature speakers, compared the operations going on around them with the building of the pyramids. This work was more important he thought.

"The pyramids were built to commemorate the dead. What we are doing here today is seeing a vision of the future," he said. "Twenty-five or thirty treatments are being applied here according to the needs and capabilities of the land. We can't afford to lose any more of our diminishing supply of good land that is needed to feed an increasing population."

Congressman John Wood of the Ninth Georgia District, who took time off from his duties in Washington to fly down for the event, said he considered it "one of the greatest milestones of agricultural progress in this part of the United States." He conveyed Senator Richard B. Russell's regrets that he could not be present and pledged their efforts in the continuation and development of a sound conservation program.

Gov. M. E. Thompson compared the demonstration with the pioneer cooperation in building the Nation. He expressed the gratitude of the people of Georgia to the *Atlanta Journal*, which was co-sponsor with the district supervisors and the Winder Civic Clubs, and to the Soil Conservation Service for making the event possible. He pointed out the opportunity for soil conservation district assistance which is now available in all but three counties in the State.

Wright Bryant, editor of the *Atlanta Journal*, said his newspaper and all of its staff were proud of their part in promoting the event, but that "without the help of the Soil Conservation Service, the civic clubs, farm implement people, and others, it would not have been possible." He pointed out that no farmer could duplicate what was being done there, but that thousands of farmers were seeing, within a few hours, results they could accomplish over a period of years.

It was left to the Reverend E. H. Collins, who presided at the speaking program, to explain why the threatening rain that might have marred the

day had not materialized. The chaplain of the Georgia Association of Soil Conservation Districts told the crowd that he had been praying for this and had told sponsors six weeks before that the weather would be good. A light drizzle during the morning had served only to lay the dust and moderate the heat.

W. H. Holsenbeck, chairman of the Oconee River Soil Conservation District, introduced the special guests. Bert D. Robinson, cooperative conservationist, assigned by the State office of the Soil Conservation Service to assist the supervisors in promoting the event, and Harvey Johnson, assistant state conservationist, were commentators on the various phases of the program.

By early afternoon, the 168-acre farm of Marion H. Carlyle and his GI nephew, Ernest C. Blakey, was beginning to undergo a tremendous transformation. Wherever visitors looked, heavy and light tractors, road patrols, terracing machines, land clearers, subsoilers, and cultipackers were busily engaged in their assigned duties of remaking portions of the farm under direction of SCS technicians.

Bulldozers that cleared land for pasture were followed by fertilizer distributors, lime spreaders, and seeders. Earth scooped out of a little valley and built into a dam was soon backing up water in a 2-acre fish pond that was partially stocked with fish during the afternoon. A yawning 50-foot gully had completely disappeared before the day was done.

Winding terraces began to appear in cultivated fields, meadow strips were shaped and seeded, land was prepared for alfalfa and rotated crops, woodland areas were thinned, steep land was planted to kudzu and sericea, new wire stretched between new cedar posts glistened in the sunlight. A new metal barn had been erected and the farmhouses had a fresh coat of paint.

District Conservationist R. L. Dolvin, who supervised planning and directed technical operations, thinks the most significant comment on the entire demonstration was an unwitting compliment paid by one of the visitors. Looking out over the beehive of activity on the 168-acre farm the visitor said to Dolvin, "You know, it's really remarkable how something as big as this can run so smoothly without any supervision."

It was a tremendous undertaking—this remaking of an eroded farm in a single day. It required a lot of planning, working, and cooperating on the





Upper left, panoramic view of part of farm on historic day of transformation. Upper right, Chief Hugh Hammond Bennett hands out hard facts from speaker's stand. Lower left, onlookers edge serpentine gully as the big trees begin to fall and filling operations get under way. Lower right, selective cutting in the modern mode.

part of everyone. But for the 60,000 visitors who went away with a new conception of the possibilities of conserving their irreplaceable soil resources, its benefits will go on for many years to come.

**CROP RESIDUES.**—Farming methods designed to leave on the soil surface a considerable portion of the residues from preceding summer or winter crops, as a mulch during the growth of row crops or small grains, have been proved agronomically feasible and practicable for the Piedmont soil provinces, according to T. C. Peele, SCS Research, Clemson College, S. C. Maintaining crop residues on the soil surface is a much more effective method of reducing run-off and erosion from areas where corn or small grains are growing than plowing the residues under and using conventional clean-tillage practices. Also, short-time trends indicate that the mulch-farming practices cause greater improvement in soil aggregation and a more rapid increase in soil organic matter and nitrogen in the 0- to 5-inch soil depth than conventional methods.

**ROUND-ABOUT VICTORS.**—How much does contour planting and cultivation add to the yield of corn? The answer might be found in an analysis of the records of the Kentucky Corn Derby.

In the one-acre group the 82 entrants who planted and cultivated their "sloping upland" on the contour had an average yield of 94.3 bushels. The 181 farmers who planted their "sloping upland" with the conventional straight rows averaged 79.3 bushels.

In the 5-acre group the "contourers" averaged 90.2 bushels while the "straight rowers" made 86.9 bushels.

The top prize for the 5-acre group went to Charles Gray of Fleming County who produced 136 bushels per acre on a 15 percent slope which was planted and cultivated on the contour. Harve McBrayer, Rowan County, winner in the 1-acre group on contouring produced 163 bushels on an 11 percent slope which had also been terraced.

The benefits of contour cultivation are not confined to increased yields. One custom operator in Nelson County gives a discount for working sloping land on the contour because it requires less fuel to work "on the level."



# 9 MILLION TREES FOR HAY CREEK WATERSHED

THE PEOPLE OF RED WING and of the Hay Creek valley in Goodhue County, Minn., have taken the first step to halt the terrific erosion and the floods which have been damaging farmland, city property, roads, and railroads.

In 1 day last spring 30 crews totaling 327 persons planted 62,000 trees on 26 farms in the Hay Creek watershed. It was Hay Creek Valley Arbor Day and everyone turned out—farmers, businessmen, 145 high school seniors, and 40 boys from the State training school. Merchants gave employees time off, with pay, to help out. Stores closed at noon. The Chicago Great Western Railroad furnished a section gang and the Chicago, Northwestern Railroad supplied a tree-planting machine.

The work was hard and the sun was hot. There were no rewards or prizes, except knowledge of a job well done.

Our story starts long before last spring, many years ago when the farm land was new and comparatively unscarred. Erosion went unnoticed for quite a while. Hay Creek then turned the wheels of half a dozen flour and feed mills, not a trace of which remains today. Tons of sand mark the spots where some of them stood. There are now few stretches of stream where a self-respecting boy, much less a trout, would swim.

Hay Creek has averaged two floods a year. Roads covered, bridges washed away, rich bottom-land buried under unproductive subsoil or debris from up above. Gullies have sliced through many of the fields. Ten years ago a bridge near town had a 14-foot clearance; today a fat man couldn't crawl under it. The railroad that runs through the valley has had to be raised at several locations and United States Highway 61 is being relocated. After every flood a tannery at the creek's mouth, one of Red Wing's leading industries, has to dig a new 900-foot drainage channel.

In 1944, after watching the situation grow steadily worse, the city council, the Goodhue County Board, and the East Goodhue Soil Conservation District asked the Soil Conservation Service to make a survey and offer a solution.

In August 1947, as a result of Service recommendations, local government officials, business-

men, and farmers organized the Hay Creek Watershed Committee. Working hand-in-hand with the soil conservation districts, this committee formulated what is known as a "group enterprise project." It has three major phases:

1. A community forest on land not suited to agricultural use. Eventually this will put 7,000 acres in timber to be used for public park, wildlife refuge, and timber-production purposes. About 115 farms will have to be abandoned for crop production. Some of them will furnish homesites and there will be some land that can be used for small fruits and orchards but the kind of farming that has practically ruined this land will stop. It will go into trees for its own good and the good of the community.

2. Complete farm conservation plans on 150 farms, totaling about 20,500 acres. Even here trees will have an important role. Seventy-five of these farmers are already putting conservation plans into effect.


3. Bank and grade stabilization structures on 13 tributaries of Hay Creek, and stabilization of 3 miles of lower channel. The local watershed committee is now working on a plan for doing this. Estimated cost, about \$225,000.

The community of Red Wing and the East Goodhue Soil Conservation District have their work cut out for them. Eventually 9 million trees are to be planted. First step was the community tree-planting on Hay Creek Arbor Day.

The crews worked under foremen trained by SCS personnel. They'll be on the job again when another planting season rolls around. Farmers and landowners bought the trees at cost from the State Conservation Department under a State law which authorizes such sales for conservation plantings. They were willing and able to pay for the trees but would have been short of labor, except for the volunteer help that was provided. The varieties were mostly Norway pine, jack pine, white pine, and white spruce.

The chamber of commerce, farm organizations, civic clubs, schools, railroads, churches, and other groups and many individuals cooperated in the event. Lee K. Moore, district conservationist, and A. J. Kunau, county agent, were general managers. Julius Kubier, Grenfall Harms, David P. Shea, and the SCS staff in the district, and Dean Turner, veterans' agricultural instructor, gave much time and energy to planning the event, training foremen, and helping with the supervision.





# *It's Always* **Fair Weather**

"The weather has been very favorable for small grain and pastures."

By McLEMORE ROBERTS

**H**OW TO OUTFIGURE the weather is often said to be the farmer's hardest job. But if he is following a complete soil and water conservation program on his farm he is ready for the weather, whatever it may be. Also, the Soil Conservation Service technician assisting a district will always have jobs on which to work, no matter what the weather may be.

I reached these conclusions after reading the March 1948 reports of district conservationists in the zone in which I work. This zone is mostly Coastal Plain country in portions of Alabama, Mississippi, and Florida. March was unseasonably cold and wet in most of the zone, and the district conservationists did a lot of talking about the weather in their reports. They went like this:

J. J. Stroup, at Anniston, Ala., said, "... the weather was far from being ideal for field work."

A. A. Sheppard, at Tuskegee, Ala., reported, "Unfavorable weather conditions have greatly retarded spring preparation of land."

NOTE.—The author is zone conservationist, Soil Conservation Service, Spartanburg, S. C.

"Sericea planting has been under way, but the rain has held it up," according to T. G. Amason, in the Wiregrass Soil Conservation District.

W. T. McKell at Brookhaven, Miss., said dry (!) weather interfered with planning because his men were kept busy helping farmers apply soil conservation to the land.

In the Black Belt of Alabama both Carl Morgan and W. H. Tucker said, "Weather conditions continue unfavorable. . . ."

H. C. Appleton, Dadeville, Ala., aptly summarized: "It may well be said that weather conditions for the first quarter of this year have, in one way or another, been unfavorable."

Now listen to how well farmers and Service technicians outfigured the same weather. Truly it's an ill wind that blows nobody good.

From Stroup's report: "The weather has been very favorable for small grain and pastures."

Sheppard: "... tremendous growth of winter legumes and small grain in the last 30 days."

Amason reported success with reseeding crimson clover. Several reports show crimson clover, Caley peas, oats, and other crops being benefited by the weather.

All who mentioned blue lupine reported cold



damage. This year's weather was generally unfavorable for lupine, but very favorable for oats and other winter-hardy crops. A year or two ago during a warm winter oats looked sick, while lupine "rang the bell."

Now let's see how the Service technicians adapted their activities to weather conditions.

Henry Bending, Laurel, Miss., who reported "ground too wet for digging kudzu" also reported 750,000 kudzu plants set out. Those plants were dug somehow. Also, "between showers," technicians surveyed terrace lines and farmers built 100 miles of terraces during March.

C. T. Prout reported that technicians assisting Mobile River Soil Conservation District arranged for woodland demonstrations in Mobile, Clarke, and Choctaw Counties, and broad-base terrace demonstrations in the same counties, plus Washington.

Stroup again: "Over 250,000 kudzu seedlings were planted, 130,000 produced locally." In this district 39 farms were planned. Also, some sort

of activity on somebody's part resulted in "52 additional applications, making a total of 254 on hand"—enough for nearly 6 months of planning.

Malcolm Croft, Conecuh River Soil Conservation District, reported, "Weather unfavorable," then his next sentence stated, "Sericea and kudzu planting has almost been completed." This group assisted in planning 47 farms in March.

In Greene County, in W. H. Tucker's work group, 280 tons of phosphate and 100 tons of lime were spread on pastures.

In the Piedmont District H. C. Appleton reported extensive dragline operations being carried on during weather that "has in one way or another been unfavorable."

Dewey Morris, S. J. Dedeaux, Carl Morgan, and Bert Karick also reported similar progress, and could have been quoted. All of these reports add up to this fact:

*Weather conditions that are unfavorable for one type of activity are favorable for another in a well-rounded soil conservation program.*



"Between showers SCS technicians surveyed terrace lines."



# INSECT NEEDS AND SOIL FERTILITY

By LEONARD HASEMAN

WE AT THE MISSOURI Agricultural Experiment Station for a number of years have been interested in studying the influence of plant nutrients on the well-being of insect pests when they are reared on crops grown on varying levels of the different soil minerals. The work of various investigators in human and livestock nutrition have shown that the higher animals generally require a ration well balanced as to minerals and growth-producing elements. Insects are animals and in many ways conform closely in activities and life processes to those of the higher animals, so we naturally expected when we began these investigations to find insects also requiring well-balanced rations comparable to man, for instance. We were surprised, therefore, to find that some of our more common crop pests do not choose or require what we consider as balanced rations, like other animals, but on the contrary they very definitely thrive better on crops grown on unbalanced mineral levels.<sup>1</sup> Finding this to be true with some of our test insects, we have asked ourselves why should a cow, for instance, thrive better on, in fact require for normal development, say, corn fodder grown on soil charged with adequate supplies of the different essential soil minerals, while the chinch bug prefers and does better on corn stunted due to a shortage of nitrogen?

Until someone finds that we are wrong, we shall assume that with their millions of years of experience here on the globe, insects have become so adaptive, not only as to their environments but also as to their specific nutritional requirement, that at least some of them are actually able to thrive better on crops or other foods so low in certain minerals or food elements that when such foods are consumed by man or livestock they may actually cause "hidden hunger" and nutritional deficiency diseases. In other words, *as we deplete soil fertility we seem to be making conditions more favorable for growing stunted crops highly favorable as food for our insect enemies, but increasingly unsuited for man and livestock.* That is exactly what we

are doing in case of the chinch bug, and the handwriting on the wall strongly indicates that similar developments are taking place in the case of grasshoppers and other major crop pests.

True, each insect species will probably be found to have its own specific nutritional requirements and they will, therefore, not all respond in the same way to a variation in the levels of the same soil minerals. Some insects require a low nitrogenous and proteinaceous diet and a high carbohydrate diet, as in case of the chinch bug, while the reverse is true of other species. Before we entomologists, therefore, can use fertilizers to best advantage against insect pests we shall first have to learn more about the dietary requirements of each major pest. Crops and soils specialists test the soil and then recommend a fertilizer which will help correct the mineral shortages and this works fine for improving crop production. *We entomologists, on the other hand, should go farther and try to learn how to vary the formula of the fertilizer so as not only to increase crop production but also to make the crop less satisfactory as food for insects and more nutritious for man and beast.*

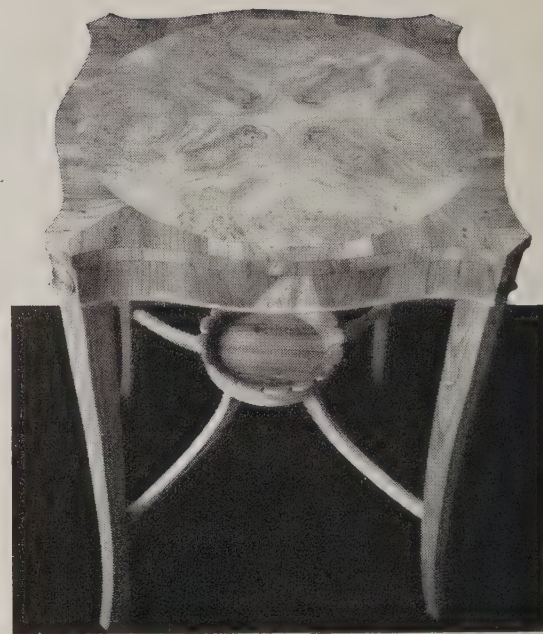
Attacking insects through the soil with fertilizers is not new, but a full understanding of just how varying levels of soil minerals, and combinations of those minerals operate in making crops less favorable for our various crop scourges, still remains to be worked out. A number of splendid pieces of research have been completed in recent years which, while not bearing directly on this problem, do include data to support the theory that by slightly varying chemical or mineral composition of an insect's food we may greatly influence normal growth, development and reproduction. Among others, I would mention Roscoe E. Hill's study of the Tuber Flea Beetle in Nebraska in Research Bulletin 143, and Charles H. Brett's studies on the Lesser Migratory Grasshopper in Oklahoma Technical Bulletin J-26. It is common knowledge that certain insect pests tend to thrive and multiply faster on undernourished and stunted crops and in weakened trees, for instance, as borers and bark beetles, and during drought years when plants generally, including even forest trees, are less able to draw up their normal quotas of soil minerals. When we stop to consider that such insects as the chinch bug

<sup>1</sup> In our studies on the greenhouse thrips we found that they definitely chose New Zealand spinach plants low in calcium and nitrogen but incidentally high in oxalate and Vitamin C.

NOTE.—The author is chairman, Department of Entomology, University of Missouri, Columbia, Mo.



thrive better in drought periods when its food crops are low in nitrogen, in fact when all vegetation is short of the essential human health-building soil minerals, Shelford's finding of "A Striking Correlation Between Human Death Rate and Chinch Bug Damage," in the early history of chinch bug outbreaks in Illinois, is but the natural thing to expect. If, as in the case of the chinch bug, we find that insect pests generally have adjusted their dietary needs to unbalanced or low levels of certain soil minerals, which obtains in case of crops grown on soils depleted of their fertility, then we entomologists should more seriously consider the opportunity we have to fight these pests with properly compounded chemical fertilizers.



Useful, ornate, and made from "waste" woods.

## WASTEFUL HABITS

By HUGH BENNETT

TRADITION and habit have played a large part in bringing about our characteristic American ways in the lavish use of our natural resources. Many of the early American settlers came from European areas of gentle, nonerosive rains and knew little or nothing of man-made erosion. Moreover, they thought our original store of good land, minerals, timber, and wildlife were limitless and inexhaustible. I think my father, who was born in 1833, felt that we would never be able to use all of our productive land here in America, although he understood something of the impoverishing effects of erosion.

We undoubtedly hold the world's record for waste. Take our land as an example: We started out with more good land, probably, than any other nation was ever blessed with; but we have allowed erosion to ruin around a hundred million acres of formerly good cropland for any immediate practical cultivation, and then have followed that up with moderate to serious damage on a second hundred million acres.

And most of us have gotten into the habit of burning or throwing away everything for which we find no immediate use. To a considerable degree, this has been forced on us. Accumulating piles of immediately unneeded items develop eyesores and harboring places for rats, we have felt. With many, storing facilities are not available.

Probably this wastage of all sorts of things is due mainly to two things: (1) In our economy it often costs more to find a market and deliver such things as waste paper and scrap iron than we get for them, and (2) we just haven't taken time out to develop economic outlets or markets for the thousands of things we either have to throw away or find it easier and less expensive to discard than to save.

During World War II, at a time when we desperately needed more timber than was available, I noticed around Christmastime that great quantities of wooden boxes and crating were being hauled away by truckloads from busy market places in a number of cities. Looking into what disposition was being made of this once-used lumber, still in good condition, it was found that almost all of it was being hauled to the city dump for burning.

Then, during the widespread discussion of how we had perilously cut into our supplies of critical metals to meet the demands of war, I ran into a situation on tin that was a big surprise to me. We have no tin of any importance in the United States—import it from Bolivia and other places. Tin is so scarce, I have been told, that some people call it a precious metal.

Well, last year when I went over to the store to buy a crate of summer tonic, the bottles had to be returned: No bottles, no tonic. But when I bought the tonic in cans and took the empty cans back, they were not wanted. "Nobody wants tin cans; throw 'em away," I was told.



The point is: Bottles are made of the most abundant element of the lithosphere, one that occurs everywhere, right on the surface of the ground. But glass is wanted, not tin—which is one of the rare elements! Probably it would be “too expensive” to recover the small amount of tin used in making an ordinary “tin can.” However, it holds a highly important place among the elements of the earth. This may give some idea of why cost of production rates so highly among the people of the earth.

Cost of production is very important, as a matter of course; we can't get away from it. Don't need to. But we do need to learn how to save scarce things.

I started to write something about utilizing odd items of wood that so commonly find their way to the scrap heap. We are probably going to have to do a lot of educating in order to get anywhere with the development of any national habits of thrift in the sense I am using it here. The real work of education will have to be done in school, all the way from first grade classes in thrift on to graduation from college. That doesn't mean, however, that a few suggestions can't be thrown in for benefit of conservationists.

I should like, by way of my suggestions, to mention a few things that can be made from wasted woods. One is an exquisite small table that W. H. Lathrop of the Soil Conservation Service made for me during spare time off duty. The top of this little table was made from a burl taken from boxelder, a wood that usually is considered worthless—not even considered good for firewood. Yet Lathrop turned it into a table top having the luster and mottling of fine marble.

Let me quote from the builder something about the construction of this useful piece of furniture. I had requested some of our men having skilled

hands with wood and a sense of the beauty in grain and pattern to make for my use a small table suitable for illustrating the point: Conservation of wood.

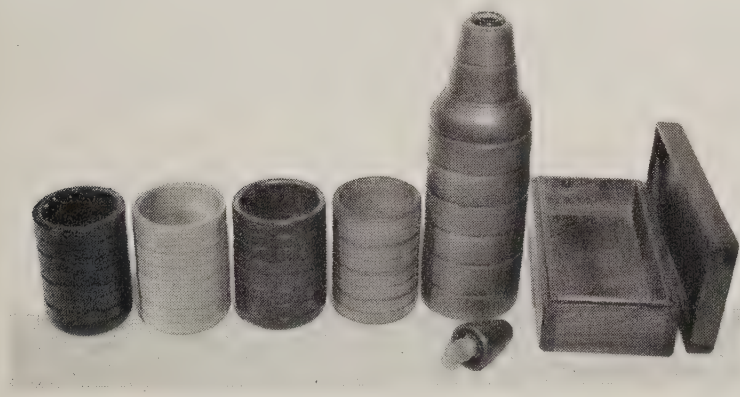
Lathrop describes the wood from which the center part of the table was made as an up-tree boxelder burl. “It was sliced into standard furniture veneer, using a half-round cut. I found this tree on a busy street here in Milwaukee, where hundreds passed it daily with no thought of the beauty hidden beneath its rough, warty bark.

“Ash, elm, cherry, oak, and other trees produce burl, but there is no regular demand for the small supply.

“Usually the greatest beauty of figured woods is the striped effect revealed by quarter cutting, but in working up very small logs flat figures will show about as much as the quarter figure.”

The honey locust used in the aprons of the table had a crotch in the log that produced a very pretty fountain-figure effect when worked up by a tangent cut. It is the highly figured portions of odd pieces of wood that are often wasted. Stumps that yield those beautiful chain-link effects are left in the ground. Crotches that cut up to show a “lovely fountain figure are impossible to split, so they usually go onto the waste pile.” It appears that some trees which grow on poor land are most likely to have highly figured wood. The struggle for existence, somehow, tends to produce such characteristics in tree growth. The poor lands occurring on the flat plains near the mouth of the Jobabo River in south-central Cuba have the reputation of producing beautiful birdseye mahogany, highly valuable for the manufacture of furniture. The growth of mahogany in this locality is exceedingly slow.

I have in my collection of wood products such items as: A set of goblets made from farm waste pieces: (1) wild cherry, (2) maple, (3) black locust from Thomas Jefferson's farm in Albemarle County, Va. (Pantops), (4) chestnut from Peter Jefferson's farm in Albemarle County, Va., (5) wine bottle, mahogany, and (6) box made of Texas mesquite. Also, I have small slabs of wood from most of our American-grown fruit trees, bois d'arc, ailanthus, sumac, and many other trees, and zapote, silicious palm, cedro real, cedro macho, laurel (mareño), balsa, and many others—all waste pieces. What I don't have are hands that can fashion useful things out of wood.

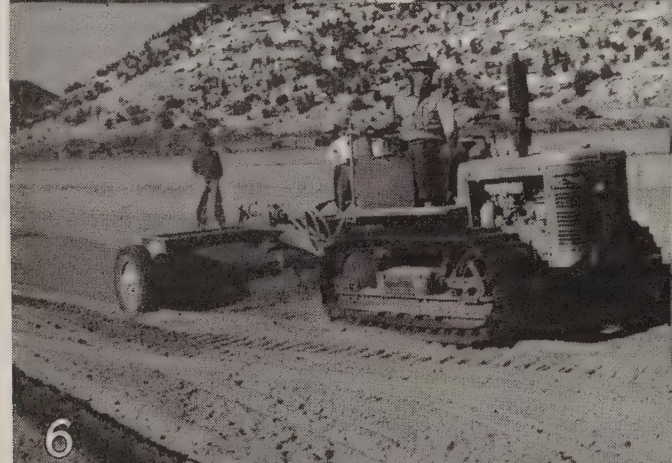


Left to right: wild cherry, maple, black locust, chestnut, mahogany, mesquite.





# Mispa



1. Hardgrave and Charles Van Gorder, unit conservationist, plan practices.
2. Winfred G. Glover, SCS engineer, "running lines."
3. At early dawn comes the roar of scores of tractors pulling many types of farm machinery.
4. The Verde River, which provides water for irrigation, also poses a serious problem: streambank erosion. Bob studies how to keep more acres from riding away.
5. Huge bulldozer in action. New channel is dug, river's course changed. Trees are cut and lashed against the bank by heavy cables; hundreds of small trees are planted for growth into a natural barrier against the knifing current.
6. Large and small machines of many types busy themselves constructing bench terraces, leveling and plowing fields, digging irrigation ditches.



# REMADE IN A DAY



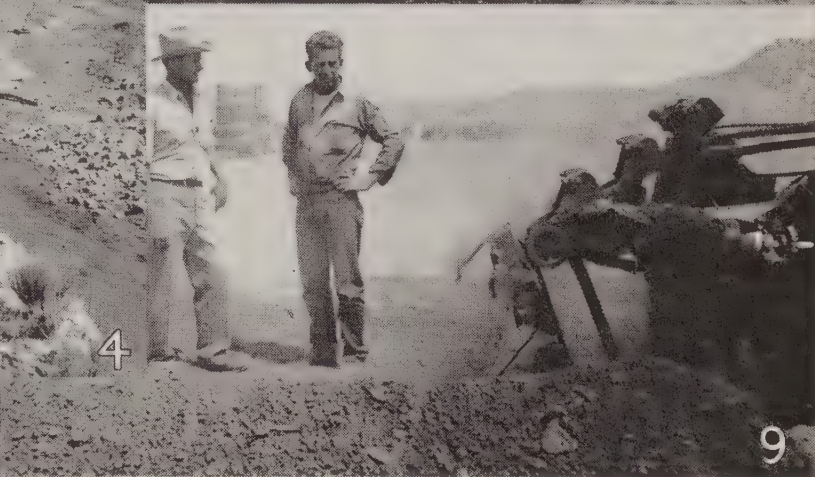
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7. General view of progress around noon.

8. But there's no let-up. Cottonwood Civic Club serves sandwiches and drinks from booths near farmhouse.

9. Danny Freeman, district conservationist in Yavapai County, gives instructions as ditching machine rips trench for irrigation pipe-line.

10. Cottonwood High School boys lend a hand at laying irrigation pipe.

11, 12, 13. Bulldozers labor at construction of large storage reservoir which will save time and labor in irrigating. The pond will provide fishing and other recreation for the Hardgraves and their friends.

(Article begins next page)



**L**OCATED on the picturesque Verde River near Cottonwood, Ariz., is the 35-acre farm of Robert C. Hardgrave, 36-year-old disabled war veteran, which was completely remade between dawn and dusk one day in April in the first face-lifting job of this type ever staged on irrigated land.

The idea of remaking a farm in a day was not new for several such events had been staged in the humid areas of the Upper Mississippi Basin within recent years. However, a face-lifting job on an *irrigated* farm involved much more intensive planning and detailed engineering work.

Nevertheless, the supervisors of the three Verde Valley soil conservation districts—Oak Creek, Bridgeport, and Camp Verde—and John D. Freeman, district conservationist for the Soil Conservation Service in this area, believed the job *could* be done in a single day. They started looking for a suitable farm and soon agreed on Bob Hardgrave's—the most farmed-out, run-down, depleted place in the entire valley, one which challenged the ingenuity of the soil conservationists.

Bob Hardgrave, an ardent believer in soil and water conservation, readily agreed to the idea when the district supervisors explained that this would provide a means for acquainting a large number of persons with the importance of soil and water conservation and with methods best suited to agriculture on valley land in Arizona and similar areas.

The community liked the idea and gave their hearty cooperation. Interest spread over Arizona and beyond. Seventy-three manufacturers and dealers in tractors and farm equipment agreed to donate the use of their machines, and the farm face-lifting job developed into one of the largest farm machinery demonstrations in the history of the Southwest. Contractors offered to donate the use of their equipment. Supply houses would furnish needed materials. Farmers, laborers, high school youths, and Boy Scouts volunteered labor.

Many long hours were spent by District Conservationist Freeman and his staff on planning. Carloads of farm equipment and materials were shipped into the area from as far away as 800 miles. The stage was set.

As dawn crept over Verde Valley that April morning, the spring quietude was broken by the

roar of more than 50 tractors as various types of machinery began moving over the fields. An estimated crowd of more than 4,000 came to view this mass application of conservation practices under ideal weather conditions. In addition to farmers from every section of Arizona, there were visitors from Colorado, New Mexico, Ohio, New York, Texas, Oklahoma, Kansas, Utah, and California.

Each man and boy in the volunteer work groups knew every detail of his job because of long and tedious briefing by Freeman, his staff, and the district supervisors. A lone woman tractor operator attracted attention as she did a masterful job of land leveling.

Farmers and business people, men and women, watched in awe throughout the day as they saw the severely eroded Hardgrave place converted into a model farm. They saw every suitable type of farm machinery, large and small, level and construct bench terraces. They saw irrigation ditches dug. The crowd was amazed as a machine spread a water-saving concrete lining in 600 feet of ditch within 20 minutes. Another ditch was lined with concrete by means of a spray gun, and a third was oil-lined.

The crowd cheered as a giant bulldozer moved mountains of earth in constructing a large storage reservoir, which will save time and labor in irrigating, and provide fish and recreation. Amusement gripped the spectators as this same huge bull-

(Continued on page 16)

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**14 and 15. Around 600 feet of lateral irrigation ditch is lined in 20 minutes with this machine. Such ditches save water and make irrigation more efficient.**

**16. Another way to line a ditch is by the pressure spray gun.**

**17. Irrigation ditches completed, and bench terracing and land leveling nearing an end.**

**18. Posthole digger speeds erection of new fences.**

**19. Small farm equipment also has its role. This midget machine plows the garden site.**

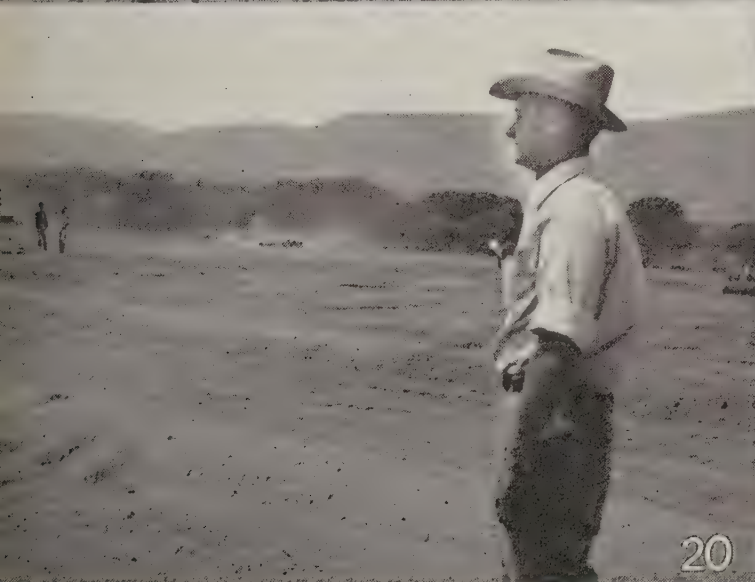
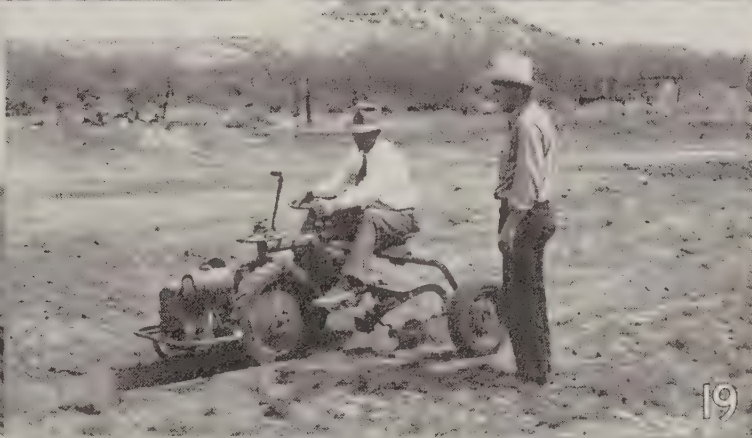
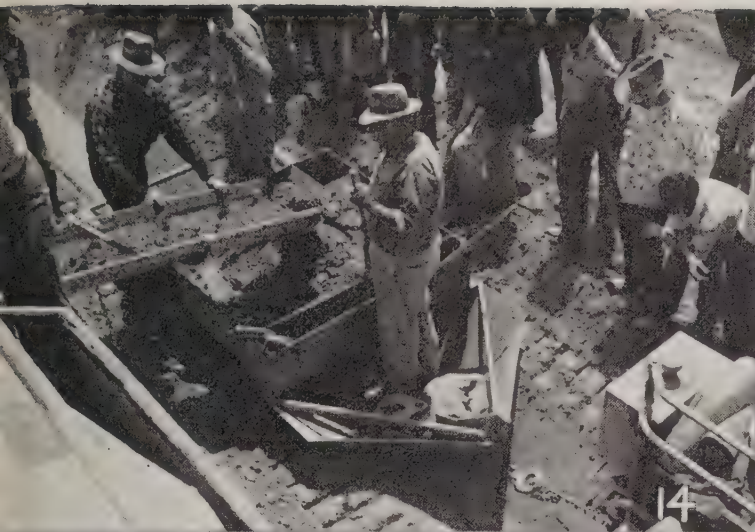
**20. John D. Freeman, in charge, looks over the scene as dusk settles over valley. It has been one of the busiest days in Danny's life, and he has the satisfaction of knowing that detailed and tedious planning has helped to convert a run-down, non-productive farm into a model of soil and water conservation.**

**21. The Hardgraves name their farm "Mizpah Ranch." Bob and Zillah (with older son Bill) nail the sign on the gate at the end of day.**

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NOTE.—The author is head of the current information section, Albuquerque, N. Mex.







dozer literally changed the course of the Verde River. A streambank protection system was installed along the area where erosion already had taken several acres of the best land.

The spectators saw just about everything done that is needed on an irrigated farm, such as plowing and floating of fields, installation of concrete and corrugated iron pipes and irrigation structures. They saw demonstrations of post-hole diggers, a mechanical trencher, a sprinkler irrigation system, siphons, and so on.

The Reverend Henry R. Buhler, pastor of the Verde Baptist Church which the Hardgraves attend, applied a coat of paint to house and barn. The paint had been donated by a manufacturer, and the minister volunteered to do the work as his contribution. A garden site was prepared, an orchard was planted, and roses and other flowers were set out around the home site.

Bob Hardgrave, who had spent 5½ years in the army and many long months in hospitals, saw his dream come true—an ideal farm for himself, his wife, Zillah, and their three children. After Bob had sufficiently recovered from his wounds suffered at Metz, he decided that he wanted a good farm. However, he found that he could not afford to buy the kind he wanted, so had to be content with the old depleted land which he purchased on a GI loan at the inflated price of \$10,000.

Hardgrave had hopes of eventually getting his land into profitable production, but he knew it would mean a long, hard struggle. Therefore, when the soil conservation district supervisors suggested to him that his farm be remade in a day, he didn't hesitate in approving. Now, work has been done which probably would have taken Hardgrave 10 years to do alone, and would have cost \$5,000 or more. The value of the farm already has been doubled and is expected to climb to from \$30,000 to \$50,000 within the next 5 to 10 years as full benefits of the program are realized.

Hardgrave and his family are appreciative of what has been made possible for them. After the day's work was finished, the Reverend Buhler and the Reverend R. S. Beal, pastor of the First Baptist Church of Tucson, conducted an old-fashioned camp meeting in front of the farmhouse as a sort of "Thank you" service.

Bob and Zillah have named their farm. On the gate they have nailed a large sign, "Mizpah Ranch, Genesis, 31:49." This Biblical reference is: "Mizpah . . . The Lord watch between me and thee, when we are absent one from another."

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## NORTHEAST

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**CONVINCING EVIDENCE.**—"I am a subscriber to the SOIL CONSERVATION Magazine and a cooperator in the Lancaster (Pa.) Soil Conservation District," writes Fred Appel. "We have a 30-acre farm on which we have a 4-year rotation of hay, corn, tobacco, and wheat. Besides this we raise several thousand broilers yearly.

"A little over a year ago, we called in SCS men to lay out contour strips. Although we had previously tried to prevent washing by getting a good sod, keeping grass in the ditches, and by other means, we have already seen a marked improvement as a result of the strips. It was a hard job to lay out the strips because the fields were so small and so irregular, but we feel it is going to be worth any extra effort required.

"Last summer in the strips planted to tobacco, one could see the cultivator furrows standing full of water for a while after a heavy rain, where previously the furrows would be washed out and the ground hard and dry. We knew then that we were storing up the rainfall, and that our fertilizer was not all going down the creek.

"Lancaster County is reputed to be the 'Garden Spot of America.' But I'm afraid the farmers here are too willing to rest on their laurels. One does not have to be too observant to see the signs written on the land all about him. While the SCS men are working so hard—and they are a fine bunch of fellows—there is much yet to be done. Farmers must be blind to let their soil slip away at such a rate. They need only to look at the farms where a conservation plan is being carried out to see convincing evidence of the results of proper methods.

"We are starting something here this year on which I would like your opinion. We were able to get a tractor and implements this spring to replace horses, so we intend to mow the hay strips and let the grass rot on the ground. Instead of letting it mature, we are going to mow it early so there will be two or three cuttings. Also we are going to scatter the straw after the wheat has been combined with the exception of the small amount we will need for a pair of hogs and about a hundred laying hens. Then we will use the manure from the broilers and apply fertilizer liberally to the corn, tobacco, and wheat. We figure this will pay better ultimately than selling the hay and straw or feeding steers or other cattle. What is your opinion of such a plan? Has it been tried elsewhere?"

**EDITOR'S NOTE TO MR. APPEL.**—I am just a little reluctant to offer an opinion concerning your new plan for mowing the hay and leaving the grass on the ground. From the conservation standpoint, there seems no question that you are on the right track. From the economic standpoint, however, there is just a little doubt in my mind. One of our research men tells me that if you were to mow the strips, save the hay, feed it and carefully preserve and return to the soil all of the manure, probably 70 percent of the value would go back into the soil in a readily available form. This certainly would be better than selling the hay. I note, however, that you seem to be engaged in poultry production rather than in the feeding of livestock. Your best course, I am quite sure, would be to talk the project over with W. Martin Muth, district conservationist, Quarryville, Pa.



## SOUTHEAST



**OUTSTANDING ACHIEVEMENT.**—Wade B. Matheny, secretary of the Broad River Soil Conservation District supervisors, in North Carolina, recently was presented with the Forest City Kiwanis Club's achievement and citizenship cup. "Perhaps one of the greatest moves ever made in Rutherford County, insofar as agricultural conservation is concerned, was the creation of the Broad River Soil Conservation District in 1938."

**GOOD TALK AND A LOT OF IT.**—The 1948 Soil Conservation Speaking Contest, sponsored by the North Carolina Bankers Association was participated in by 4,328 contestants, representing 303 schools in 82 counties. Thirty-six radio addresses were made by competitors, 201 field trips were made, more than 404 news articles were printed. Total prizes (school, county, district, and final) amounted to \$6,053.

## UPPER MISSISSIPPI

**SUBMARGINAL NO LONGER.**—Eight years of progress in the Cedar Creek Forest and Pasture Project in Callaway and Boone Counties, Mo., started under the land utilization program, illustrate what improved land use and soil conservation can mean to a community once impoverished by too intensive farming.

The annual report of Cleo H. Statton, district conservationist at Fulton, states that the 12,839 acres of land in the project area are gradually being returned to productive use. All of this land had been in the submarginal class since the early 1920's, but it was not until January 1939, that the SCS launched its forest and pasture project.

About 1,233 acres of the area have been fully improved, and approximately that much more has been partially improved. The land that is suitable for pasture is being rented to farmers in that area, and a part of the revenue is turned over to the county in lieu of taxes that might normally come from the land if it were owned by private individuals.

Last year the Government paid Callaway County \$821.06 in lieu of taxes, or approximately two-thirds of the taxes that would have been charged against the land. However, before the land was taken over by the Government, taxes on many farms in the area were delinquent and the farms came up regularly for sale at the delinquent tax sale each November.

There are five areas in Callaway which returned more money to the county than it would have realized if individuals had owned the land and paid taxes. These

areas netted the county \$300.92, as compared with a normal tax bill of \$170.73.

In his report, Statton said: "Eighty-eight farmers living in the Cedar Creek Forest and Pasture Project received direct benefits in 1947 from the use of project lands. Their greatest benefits came from grazing livestock. Use of this land enabled these farmers to supplement their farm production and income. It was estimated that 246,970 pounds of beef were produced by this additional grazing. A total of 1,204 head of cattle were grazed for a total of 3,754 animal-unit months, in spite of the total grazing season not being up to normal.

"In addition to the cattle, 86 horses and mules were grazed for 209 animal-unit months. Thirty-one acres were used for cropland and 10 tons of hay harvested.

"Fifty-one percent of the grazing of 2,028 animal-unit months was obtained from 834 acres of land which had been limed and fertilized, and on which grasses and legumes were growing. Each acre produced grazing for one animal-unit for a 2.34-month period.

"On pastures where no development or improvement has been made, 2,262 acres furnished grazing for only 1,178 animal-unit months.

"In addition to the above uses of the Cedar Creek area, quite a number of farmers and townspeople have used the ponds for fishing. The ponds have not been fished heavy enough and too many of their catch are small. Sportsmen, using the area for hunting quail and rabbit, reported that the improved areas were as good or above average for the county.

"The agricultural economy in the Cedar Creek area has improved materially since the project was started. Farmers have not only improved the use of their land, but they have adopted many soil- and moisture-conservation practices. Continued improvement on the part of farmers in this area will reestablish a well-balanced system of livestock production."

**POINTERS FOR MEETINGS.**—What makes a good annual meeting of a soil conservation district? Some points which supervisors of some eastern Ohio districts obtained from cooperators and friends who attended their meetings—as reported by James W. Pendry, district conservationist at Lisbon, Ohio, are: short program with a good, but "not too serious," speaker; refreshments; neat, attractive, simple displays that tell a story; and plenty of advertising.

Displays included a large ownership map of the district with all cooperators' names. Many farmers saw for the first time that their neighbors were cooperators. Cooperators and friends gathered around the map to discuss plans on different farms. Several farmers applied to the district for assistance.

A "before" planning map, conservation survey and land-use capability map, and farm-plan map of the same farm in greatly enlarged form were displayed. The farm planner was there to answer questions. The maps were surrounded by pictures showing farm conditions. Labeled kodachrome slides projected on frosted glass showed scenes in the district. A demonstration on value of cover, using ink spilled on a blotter versus glazed surface, and soil samples taken from fence rows, compared with samples from fields, attracted considerable attention.

A display of bulletins available from the local Soil Conservation Service office, with a tablet for requests, brought good results.

After the meetings ended, many people were still looking at displays and discussing conservation.

**HOW TO GET MORE WORK DONE.**—Work-load analyses by SCS personnel and district directors in Michigan have proved effective in planning their program and developing a calendar of activities.



Some measures which the directors have decided to use to carry an increased work load include more rigid screening of applicants for technical help, calling applicants in for personal interviews at regular and special meetings, relisting applicants in accordance with urgency of need and degree of interest, getting more help from other agencies and cooperators in application of practices, and taking on more responsibility by directors and asking technicians to do fewer "chores" for them.

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**"MAKE EVERYONE CONSERVATION MINDED."**—Many conservation activities have been carried out by Macomb Kiwanians under the leadership of their Agricultural Committee.

Early in 1947 the theme "Make Everyone Conservation Minded" was selected and agricultural leaders of the county were entertained at a regular meeting of the club. Invitations were sent to vocational agriculture instructors, 4-H leaders, representatives of the Soil Conservation Service, soil conservation district directors, veteran class instructors, and farm bureau directors.

Early in the summer, a dinner meeting was held at a rural church at Bardolph, Ill., to which prospective farmer leaders of conservation groups were invited. Each was seated near a Macomb club member who was prepared to talk soil conservation to his guest. The program included a panel discussion on "How to Get Conservation on the Land." Members of the panel included businessmen and farmers from the club, soil conservation district technicians, and two farmers who had completed soil conservation plans on their farms with the help of the East Lamoine Soil Conservation District. The panel discussion developed the idea that these farmer-guests could organize and lead groups for conservation planning in their *own* neighborhoods. Result was the organization of four planning groups with an average of 10 farmers in each group. Several other meetings were held with similar results.

During the year a conservation booklet was published and distributed to about 4,000 landowners and operators, and businessmen of McDonough County. The booklet contained local pictures, local accomplishments, and local plans.

Thus, the conservation activities of the Macomb club last year reached more than 4,000 people. Many Kiwanians who previously had little knowledge or interest in the program have become interested in soil conservation and 80 farmers in groups are working out farm conservation plans.

Macomb Kiwanians intend to continue the conservation activities of the past year and plan to add some new ones.—Hampton Long.



**GIVE WILDLIFE A CHANCE.**—A new form of recognition for farmers, emphasizing the place of wildlife in the farm conservation plan, was initiated this year by the Northwest Sportsmen's Show at Minneapolis, Minn.

The committee selected four Minnesota farmers who had done an outstanding job of soil and water conservation with special attention to wildlife. The farmers who

were honored guests at the show for 3 days were Gilbert Goenner, Clear Lake, supervisor in Sherburne Soil Conservation District; Edwin Goplen, Zumbrota, chairman, South Goodhue Soil Conservation District; James Weideman, Sabin, Clay County Soil Conservation District; and Bert Hanson, Vernon Center. They received their awards at a dinner in March. Candidates for the awards were nominated by 30 Izaak Walton League chapters in Minnesota.

The winners have done an outstanding soil conservation job and have included wildlife management and protection in their plan. Most of them are active in sportsmen's groups and programs.

Goenner has devoted 60 acres of his 470-acre farm largely to wildlife. Since 1942, he has planted 6,000 trees for field shelter belts and wildlife cover and has protected 70 acres from burning and grazing. Planting rice in a duck pond, release of 50 pheasants, and planting of millet or cane for winter feed are among Goenner's other activities. He has been active in the Clear Lake Sportsmen's Club and helped establish a fish pond on a neighboring farm.

Weideman has a 20-acre wildlife area, leaves some grain for birds, has done special wildlife feeding when 50 inches of snow covered the food patches, and is a member of the Moorhead Rod and Gun Club.

These men all farm so wildlife has a chance on their land and regard it as a crop to be perpetuated, enjoyed and used.

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**COST ANALYSIS.**—To secure some information to present to the Vincennes Kiwanis Club, Lester Binnie, district conservationist at Vincennes, Ind., made an analysis of costs and returns for a conservation system on a 201-acre dairy and general farm in the Knox County Soil Conservation District.

The owner began his farm conservation plan in 1941 and all practices have been installed with the exception of one system of terraces and a tile drainage system of about one-half mile. The cost will average \$12.50 per acre. He reports that he now is producing one-fourth more corn per acre, one-fifth more wheat, and one-half more hay and forage crops, and as a result his livestock enterprise is one-third greater than it could have been under the old system.

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## SOUTHWEST

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**DELEGATES TO VISIT DISTRICT.**—More than 300 soil conservationists of the Americas are expected to attend an Inter-American Conference on Conservation of Renewable Natural Resources to be held in Denver in September.

The conference will consider conservation problems and recent technical developments in the conservation field. Among the problems discussed will be those arising from erosion, overgrazing, floods, failing water supplies, deforestation, and wildlife destruction.

The delegates will make a tour of the Cherry Creek Soil Conservation District. Also included will be a visit to the Walter Schubarth farm on which a complete soil and water conservation program has been established.

Another feature of interest to the conference will be the complete remaking of a farm in a single day in the Denver area.

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**PERPENDICULAR VIEW.**—Practically every dry-land wheat farmer in the East Juab Soil Conservation District now has had a bird's-eye view of soil erosion on his land as a result of an aerial soil conservation tour staged at Nephi, Utah, last April.

This was the second such tour held in Utah recently through the cooperation of the Utah Flying Farmers and



soil conservation districts. The first air tour was held in the Northern Utah Soil Conservation District under adverse weather conditions, with more than 200 farmers viewing their land from the air.

The district supervisors cooperated with Wesley R. Dickerson of the Soil Conservation Service, and Delbert A. Fuhrman, president of the Utah Flying Farmers, in making this second tour a success.

Dickerson explained to the farmers that they could see vividly from the air the exact damage being done by erosion, how small gullies in tree-like fashion are cutting deeper and deeper and robbing their land of topsoil.

More than 30 Flying Farmers from all sections of the State brought their planes to the Nephi airport. The Nephi Flying Club provided a luncheon for the visiting fliers and farmers, and the East Juab Soil Conservation District furnished gasoline and oil for flights.

Before the start, motion pictures of soil erosion and remedial conservation practices were shown in the hangar, and conservation technicians told farmers what to look for. Practically every farmer in the district was taken on a flight, and then inspected a display of farm machinery set up near the airport.

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**HOME-GROWN SEED.**—Reseeding is being done on 2,000 acres of abandoned cropland in the 15,000-acre Hawes and Thompson ranch in the Eastern Colfax Soil Conservation District, near Raton, N. Mex.

The abandoned cropland was a consequence of the fact that the ranch was made up of several old homesteads acquired by purchase. Much of it had been seeded to crested wheatgrass prior to the advent of the soil conservation program, but it had done badly because of adverse moisture conditions.

Another seeding of 500 acres with a mixture of crested wheatgrass and sweetclover was tried in 1945. A good stand was obtained on 120 acres, but the rest failed because of poor moisture conditions.

This 120-acre area was excluded from grazing in 1947, moisture conditions were favorable, and approximately 22,000 pounds of mixed crested wheatgrass and sweetclover seed were harvested.

The ranch owners retained the seed and last spring planted the mixture on 1,500 acres of the abandoned cropland on which reseeding operations had failed in 1944. With favorable conditions, the ranch owners expect to have practically all of the abandoned cropland back in grass production.

This illustrates, SCS technicians note, what can be done if farmers and ranchers will plant a small acreage to grass for seed production, and then use the seed to carry through a revegetation program.

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**SMOOTHED WAY TO BETTER YIELDS.**—The moving of 316,000 cubic yards of earth in leveling 300 acres, and the elimination of a mile of irrigation ditch in the process, is an accomplishment of Allen Belluzi, chairman of the Roosevelt Soil Conservation District near Phoenix, Ariz.

The land was so rough that it could hardly be farmed, and Belluzi's cotton yields were small. SCS engineers planned the leveling job for Belluzi, and he employed an earth-moving contractor to do the actual work last fall.

Barley was planted on most of the leveled land. Although the seeding was very late, yield prospects now are so good that Belluzi feels certain that the crop will offset to a great extent his expenditures in putting the 300 acres into first-class condition. He says that when he can get more organic matter into the soil his yields will be still greater.

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**ANOTHER DEMONSTRATION.**—Jules Vermeersch, supervisor of the New River Soil Conservation District near

Phoenix, Ariz., has announced that a remaking-a-farm-in-a-day demonstration will be held in the Salt River Valley this fall. Vermeersch reports that he already has the pledges of farm equipment dealers to provide materials and the use of all necessary machinery, and that he expects at least 50,000 visitors.



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**CIVIC MINDED DISTRICT.**—The San Juan County (Utah) Soil Conservation District recently donated \$100 to a local hospital during a fund-raising campaign. The district has acquired pieces of equipment from time to time, and over a period of years has accumulated enough capital to make such a donation possible.

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**GOODEN LEVEL.**—Soil conservation practices have solved two problems for R. G. Gooden on his 160-acre farm about 8 miles southeast of Artesia, N. Mex. They have more than doubled the cotton yield, and saved more than 50 percent on water for irrigating.

After Gooden became a cooperator of the Central Valley Soil Conservation District, he checked his 160 acres against an adjacent 80-acre farm. He found that his yield of a half bale of cotton per acre was only half the average of the 80-acre farm—and he was using four times the water.

He consulted SCS technicians assisting the district, and decided to carry out a complete soil and water conservation program. First, 14 acres of the steepest land were leveled into 43-foot benches. Drop structures and turn-out boxes were installed to keep the main ditches from washing while turning water into the narrow benches.

In 1947, the first year following, Gooden harvested 1½ bales per acre. This was more than double the previous yield, and water was saved, erosion was checked, and irrigating was easier.

Gooden was so well pleased that he has leveled an additional 105 acres. Even though the cost ran greater, Gooden leveled this land in much wider benches, 196 feet wide, because this will make farming easier. He figures that this increased expenditure soon will be offset by increased cotton yields.

Gooden still isn't through. He has arranged for completing the leveling job on his entire farm.

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**PASTURE PROGRAM.**—Approximately 20 experimental irrigated pastures will be planted in Duchesne County in northeast Utah this year by cooperators of the Uintah Basin Soil Conservation District.

The district supervisors, sponsors of the project, announce that the purpose is to determine how best to establish an irrigated pasture to provide feed for two heavily producing dairy cows from one acre during grazing season.

DeWitt C. Grandy, SCS technician, recommends seeding mixtures of smooth brome grass, orchard grass, tall meadow oat grass, ladino clover, red clover, and ranger alfalfa.

Methods of preparing the seedbed, planting, and management during and after establishment are being stressed. A compact seedbed comparable to one for planting alfalfa is favored. Drilling is preferred. It is essential that the



planting be kept damp for the first three weeks after seeding, says Grandy.

Rotation grazing is advocated with at least two, and preferably three or more separate pastures. This will make it possible to keep cattle off pasture during irrigation and when the soil is wet. Mowing will be used for control of weeds and to encourage uniform grazing.

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## PACIFIC

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**FROM A 6TH GRADER.**—"When I grow up, I intend to be a farmer. But if the soil keeps disappearing off the hilltops into the ocean and valleys, what would I and all the other young farmers have to look forward to?

"We will have deep gullies, with clay on the hilltops instead of soil. There will be rocks uncovered, deep holes, and dead trees with roots exposed. There will be dust swept deserts and deserted farm homes with dirt piled all around. All of these things and many others makes the future look gloomy for us.

"Now if I were Paul Bunyan, I would do something about it. I would harrow the land and take the rich soil and put it back on the hills where it belongs. But since I'm not, I think the present farmers should do the next best thing.

"In the first place, I think the farmers of today should have no more land than they can handle and take care of well. Too many farmers today, have too much land. They farm it for all they can get out of it and yet put nothing back into the soil. I think they should plant some of it in grasses. They should strip farm; they should plow around the hills, not up and down; and they should use the right kind of machinery for the kind of ground where they live.

"In some places they should dam small streams to hold the water so that it would not wash the soil. And if the summer was dry, the farmers could use it. There should be some kind of livestock on every farm and the pasture land should be changed *every* year.

"Soil erosion is not new. In the book I got at Palouse on erosion, it said that soil erosion started as soon as the first winds began to blow and the first rain began to fall on the earth. Where vegetation is heavy, the erosion is slight, but where the land is bare and cultivated, the soil does not have any protection from winds and rain. This means gradual soil destruction or suicidal agriculture unless the use of land is changed.

"The Agriculture Department is doing all it can to save our soil, but the rest is up to the farmers.

"If I were a farmer now, I would do all I could do and I wouldn't be a hog of the land. I would want just enough land for a home and enough to carry out my plans and ideas for a permanent agriculture."—Mahlon Kreibel, 6th grade student, Garfield, Wash.

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## RESEARCH POINTERS

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Prepared by J. H. Stallings

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**VEGETATED WATERWAYS.**—Bermuda grass is superior to other grasses tested in protecting waterways from erosion, according to M. B. Cox and V. J. Palmer, SCS research, Stillwater, Okla. Bermuda grass provided more protection when clipped and maintained short than when allowed to grow tall and rank. Mowing produced a very dense, uniform cover that did not develop with the hay cover. Alfalfa, weeping lovegrass, and a native grass mixture were the least effective in preventing bad erosion.

**ORGANIC MATTER.**—Management of organic matter means management for the control of soil erosion by water and wind, of crop yields, soil structure benefits, irrigation, and water infiltration, is the opinion of T. M. McCalla, SCS research, Lincoln, Nebra. The soil should be conserved because it is the source of food now and for generations to come. It should be protected against erosion, leaching, and loss of fertility through cropping. This can be accomplished by following proved conservation and fertility practices. Manures and crop residues should be utilized to the fullest extent, along with other sound cropping and land management practices.

**PLANNING AN IRRIGATED FARM.**—A topographic map, which shows the location of the fields, streams and natural features and gives the elevation of all parts of the unit, is one of the most important assets in planning an irrigated farm, finds John D. Woods, SCS research, Denver, Colo. A soils map which designates the type of soil to be encountered to a depth of 3 or 4 feet, or beyond the root zone of most plants is also a requisite. With the aid of the topographic and soils map it is possible to classify the land as to future use. That is, whether it should be in permanent pasture or grass, planted to row crops 1 year in 5 and close-growing crops the rest of the time, or whether it should be used in any desirable way without erosion and waste of water. These two maps will also show which fields need to have the surface leveled in order that the water can be effectively applied.

**SUBTILLAGE AND CROP RESIDUES.**—Subtilled land protected by crop residues proved to be superior to plowed



and in conserving soil and water and producing high yields of crops, states F. L. Duley, SCS research, Lincoln, Nebr. Plowed land unprotected by crop residues lost an average of 2.5 times as much run-off and 4.7 times as much soil annually as subtilled land protected by crop residue. Oats produced 61.6 bushels per acre with residues subtilled following 2 years of sweetclover compared with 54.8 where the residues were plowed under. Corresponding increases in yields were obtained with wheat, corn, and pink kaffir.

**EROSION AND CROP YIELDS.**—Severely eroded soil loses more water and produces lower yields of crops than moderately eroded soil, report C. E. Bay, H. B. Atkinson, and O. E. Hays, SCS research, La Crosse, Wis. Plots with only 3 inches of topsoil lost 45 percent more soil and water than plots with 6 inches of topsoil. The moderately eroded plots produced 29 bushels more corn per acre, 9 bushels more small grain and 0.3 ton more hay than severely eroded plots, during the period 1940-42, where a 5-year rotation of corn, small grain, and 3 years of alfalfa-broome hay was used. During this same period moderately eroded soil planted to corn lost 19.05 tons of soil per acre annually and severely eroded soil lost 20.94 tons. Corresponding figures for small grain were 21.61 and 39.49 tons per acre and 0.18 and 0.57 ton soil per acre when planted to hay.

**RUNOFF AND SEDIMENTATION.**—The magnitude of sediment damages resulting from soil erosion and watershed deterioration is just beginning to be recognized, according to Carl B. Brown, SCS research, Washington, D. C. The storms of May and June 1947 caused an estimated damage of \$1,402,000,000 in the lower Missouri River Basin. The agricultural land damages amounted to \$720,000,000; crop losses on overflowed bottomlands amounted to \$40,000,000; crop losses from rain, wind, and runoff on uplands amounted to \$100,000,000; land damage by stream-bank cutting and major gully development was \$4,000,000; damage to bottomlands by flood-plain scour and sediment deposits was \$134,000,000; and land damage to uplands by sheet erosion on the basis of \$1 per ton of soil lost from tillable land, was \$424,000,000.

**FERTILIZER EFFICIENCY.**—That cropping and cultural practices which result in sheet erosion rapidly lead to inefficient use of fertilizer, is the belief of John Lamb, Jr., Everett A. Carlson, and George R. Free, SCS research, Ithaca, N. Y. The yield of corn in 1947 varied from 17 to 75 bushels per acre, depending on the previous cropping system and resultant erosion. All plots were uniformly fertilized at the rate of 1,000 pounds per acre with 10-10-10 fertilizer. The study was in its eleventh year.

**SAVE THAT SOIL.**—Continuous corn plots on Marshall loam lost 38.2 tons of soil per acre annually over a period of 16 years, states G. M. Browning, SCS research, Ames, Iowa. This is equivalent to one-third inch of topsoil per year. Corresponding losses for a 3-year rotation of corn-oats-meadow was 9.6 tons, with 18.4 tons for the years in corn, 10.1 tons for the years in oats and 2 tons for the years in meadow. Where an additional year of corn was

added to the rotation the average annual loss of soil per acre increased to 14 tons. Continuous alfalfa plots lost an average of .1 ton of soil annually and continuous blue-grass plots lost .03 ton.

Contour cultivation reduced soil losses by 50 to 80 percent and increased the yield of corn 7.3 bushels per acre, soybeans 2.7 bushels and oats 5.4 bushels. Terracing and the use of crop residues and grassed waterways were also effective in reducing soil losses by erosion.

**BRUSH REMOVAL AND GRASS.**—Grass production was increased more than 5 times by removing dense growth of oak brush, and beef production was doubled by mowing sagebrush, reports M. B. Cox, SCS research, Guthrie, Okla. Farmers who cleared wood pastures claim increases in return from 5- to 8-fold. The production of native pecans was greatly increased by removing the underbrush and other species of trees.

**SAND LOVEGRASS.**—Native stand lovegrass has proved to be one of the most valuable and useful grasses for Oklahoma, according to Harley A. Daniel, SCS research, Guthrie. It is adapted to soils ranging from very sandy to fairly heavy. It is a lush-growing, fine-stemmed, medium-tall bunch grass with a rich growth of soft basal leaves. It is one of the best grasses for the Great Plains in year-long grazing value. It provides good yields of highly palatable and nutritious forage from early April to late October and has ability to retain in its winter-cured condition a large percentage of the high food value it possesses during the growing season.

**SUMMER FALLOW.**—Summer fallow can be safely and profitably practiced within its climatic limitations where good crop residue management is combined with it, is the belief of H. H. Finnell, SCS research, Amarillo, Tex. The one exception is the arid marginal zone, where crop failure, with or without summer fallow is sometimes so persistent that crop residues disappear in spite of the farmer's efforts to the contrary.

**PINE-TREE GROWTH.**—Room for root development in the surface soil and the physical properties of the subsoil which determine moisture availability and aeration are of primary importance in determining the quality of land for pine forests, reports T. S. Coile, Duke University. Depth of the surface soil and the water-storage capacity of the subsoil are the main characteristics determining the ability of soil to grow loblolly and shortleaf pine. Using this as a basis the potential productive capacity of land for pine forests can be estimated.

**PRODUCTION INCREASES.**—Farmers cooperating with the Soil Conservation Service are making a notable contribution to the Nation's "all-out" effort for greater food production, says H. O. Anderson, SCS research, La Crosse, Wis. A La Crosse County farmer, who has been following soil conservation practices on his farm since 1934, increased his production of livestock by about 40 percent, butterfat



production by 50 percent, and egg production by about 30 percent during the past 9 years. These accomplishments are all the more noteworthy because the farmer operates one of the roughest farms in the county.

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**KENTUCKY "DERBY" WINNERS.**—The highest average yield of any group of entrants in the 1947 "Corn Derby" as far as land use is concerned was for those who planted their corn on tile-drained land. The 70 farmers who planted their derby plots on tile-drained bottom land had an average of 98.8 bushels an acre which is 12 bushels above the average yield of the 1,125 farmers in the contest.

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**16TH CENTURY WISDOM.**—"I do not wish to go into any more detail on all of the beauties and benefits of the woodlands and orchards. More than anything, I would like to enjoy them in my old age, if God pleases (and there isn't any one who does not hope to reach old age) while in your youth you must work and put out all of your effort and not seek rest and repose; as Tulio says—the elders repose and rest with the trees that they planted as youths. They should not wait to sow when old, for those that plant trees then, are like those who marry in their old age and leave little children and orphans. I do not say that, because they are old, they should stop planting, although they may not be able to enjoy them. Moreover there are none, however elderly they may be, that do not hope to live out their life, yet some never begin to do so. It is foolery to hope to live and not work continually to maintain life, moreover the enjoyment of the forests so saintly, so agreeable and sporting requires so little work, that it could not be less, and so beneficial that a good act of planting a tree profits the present and future, and as long as the tree lives it tells of that good act.

"Those that sow the fields only help themselves and a little after them; he who works profits by it, and little thanks to those who just work for themselves, or at the most for their children; it is better to plant trees for the children and grandchildren and future generations; and like others who plant for us, and we enjoy their efforts, a just thing is that we plant for us and for the ones that will follow us. Well it would be good if each one would try to plant and grow trees. The most productable age of a tree, according to agriculturists is from twenty to thirty-five years of age. Since a man knows how to do things before he is so old he can no longer stand, it would be good that he plant and grow trees, without waiting too long. How many in their old age, have grown trees and that have not waited to see the fruit and received pleasure from them, and how many twenty years of age have received pleasure from trees that they planted when children!

"Likewise, it is said, that first plant the tree and then build the house, because the forests will help to make the house and not the house the forests. It appears to me that whomsoever would want to have a house in which to live, and have the forest to make him rich, will be able to build better, and that is my understanding of what they say."

(Taken from the book by Gabriel Alonso de Herrera "Book of Agriculture—Farming, Livestock, and many other subjects and benefits of the farm", Alcalá, year 1513.

Translated from Spanish by Adela R. Lopez, Office of the Foreign Liaison Representative, SCS).

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**COVER CROPS PROTECT.**—Whether you call it a green manure crop, a catch crop, or a winter cover crop, the practice is a good one and is essential to good soil conservation management, states Karol J. Kucinski, SCS Research, Amherst, Mass. Whatever the name, cover crops produce desirable vegetative growth on crop land which protects the surface from both water and wind erosion. Cover crops also catch the unused fertilizer which remains in the soil after the main crop has been harvested. Farmers, in order to obtain good yields, apply considerably more fertilizer than is used up by the harvested crop. Cover crops, or catch crops, while preventing soil erosion, will stop these excess plant nutrients from leaching out and save them for the succeeding crop, and at the same time will add desirable organic matter to the soil.

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**TRIPLE BENEFIT.**—It is possible to increase the yield of cotton, to check erosion, and to improve the soil at the same time, by growing a crop in good soil-conserving and soil-improving rotations, avers W. E. Adams, SCS Research, Watkinsville, Ga. The rotation needs close-growing summer cover crops, which protect the land against erosion and supply leguminous residues to the soil. The soil is made more fertile, more mellow and absorptive, less erodible, and easier to manage by addition of organic matter.

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**STOCKING FARM PONDS.**—Farm ponds should be stocked with bluegills and bass, states Wallace L. Anderson, SCS, Milwaukee, Wis. Bluegills and bass make a combination that will consistently and indefinitely produce good fishing and high production. They must be stocked in combination because neither species alone is satisfactory.

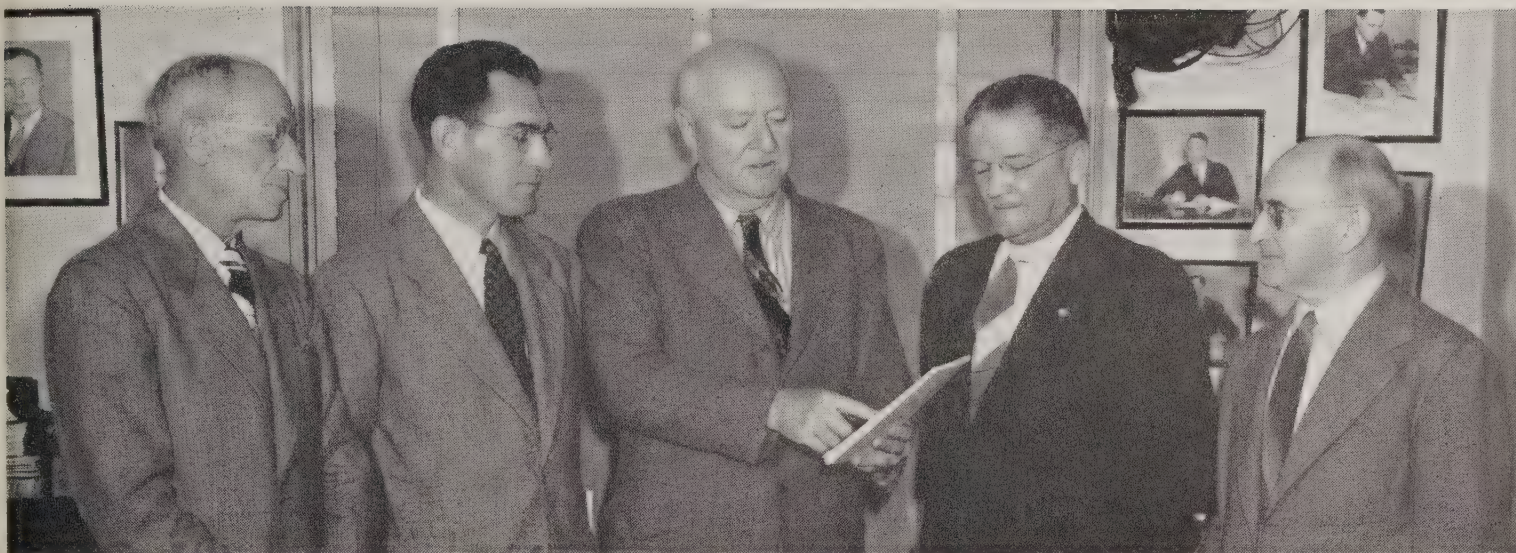
The number of each of these species used in stocking should be determined by the carrying capacity of the pond. Each pond will support a certain weight of fish per acre, and the best fishing is produced when just enough fish are stocked in the pond to reach that weight in one year. A highly fertile pond has a larger carrying capacity and can be stocked with more fish than an unfertile one.

Stocking with fingerling bluegills and bass in the fall, or fingerling bluegills in the fall, followed by advanced bass fry the next spring, is the only procedure that gives consistently good results.

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**RATE OF RESERVOIR SILTING.**—The rate of silting of a reservoir depends upon its capacity, the quantity and nature of sediment delivered to it, and its ability to retain sediment, alleges L. C. Gottschalk, SCS Research, Washington, D. C. Some watersheds produce an abundance of sediment while others, of equal size, do not. In some cases, sediment remains in suspension for long periods of time and is carried through the reservoir and over the spillway. In others, it may be deposited almost immediately near the head of the reservoir. Some sediment





Talking over the honors: Parshall, "Molly", Chief, Hull, Jones.



Wells A Hutchins receives award from Norris E. Dodd, then Under Secretary.

**HONORS FOR FIVE.**—At its second annual Honor Awards Ceremony in the Sylvan Theater, on the grounds of the Washington Monument in the Capital, the United States Department of Agriculture showed its "appreciation for the talented, efficient, reliable work of outstanding public

servants." Five employees of the Soil Conservation Service were presented Superior Service Awards, with appropriate medals and citations:

William X Hull, Washington, D. C., "For outstanding service to agriculture in having spread the gospel of soil conservation through developing and coordinating a program whereby outstanding representatives of foreign nations have been trained in soil conservation so that they might return to their native lands and develop soil conservation programs."

Wells A. Hutchins, Berkeley, Calif., "For especially meritorious service to agriculture in the Western United States and the Territory of Hawaii in codifying and clarifying western water laws and simplifying regulations affecting the delivery and use of water by irrigators."

Lewis A. Jones, Washington, D. C., "For especially meritorious service to agriculture through his leadership and efforts in the drainage and reclamation of wet, swamp, and malaria-infested lands and the conservation, use, and management of water resources."

Remo Molinaroli, Kingstree, S. C., "For outstanding leadership in helping to develop a sound soil-conservation program and particularly for his efforts in developing a widespread interest and adoption of drainage and irrigation practices in an area where such practices had not been prevalent."

Ralph L. Parshall, Ft. Collins, Colo., "For perfecting and introducing simple, economical, and effective water-measuring and desilting devices used extensively in irrigation systems in the United States and foreign countries."

deposits compact readily, whereas others compact slowly. Reservoirs of equal size but of different use may trap sediment at different rates.

**ON THIN SOILS.**—Erosion control can be obtained on erodible lands if they are placed under permanent cover of grass or forest, according to J. B. Pope and P. R. Johnson, SCS Research, Tyler, Tex. Sloping, intensively cultivated fields, on the other hand, require not only the use of improved rotations and protective winter cover crops but the additional support of mechanical practices such as contour cultivation and terraces. Subsoils erode more readily than the normal topsoils where planted to clean-tilled crops. As the soil becomes thinner the rate of erosion increases. This indicates the need for more intense erosion control measures on the thinner soils.

**CUTTING DOWN SEDIMENT.**—The rate of sediment production can be reduced at least 50 percent and in many cases from 75 to 90 percent by universal application of practicable soil conservation measures, without reducing the level of agricultural production or net farm income, claims Carl B. Brown, SCS Research, Washington, D. C. This degree of reduction, however, is contingent upon practically unanimous cooperation of landowners and operators in use of the land in accordance with its capabilities and treatment of the land in accordance with its needs.

**THANK YOU!**—In a recent letter referring to SOIL CONSERVATION Magazine, Paulina Gomez-Vega, Ministerio de Minas y Petroleos, Bogota, Colombia, writes: "I must thank you for the great help I have had by your publication in controlling erosion in a 55 acres farm I have at present, as a demonstration, in one of the most eroded regions of Colombia."





From left: Harry A. Gunning, A. E. Jones, Richard P. White, Hugh Bennett.

**CAPITAL PROTECTED.**—Conservation planning of commercial nurseries has been stimulated greatly by the interest of the American Association of Nurserymen. Dr. Richard P. White, permanent secretary of this very active association, is an agriculturalist of note in his own right. Formerly with Rutgers University of New Jersey, Dr. White gained national recognition as an authority on ornamental plant diseases. His broad knowledge and experience in the technical field of agriculture have been advantageously used in his association work.

He has been interested in soil conservation and has been a friend and constructive critic of the Soil Conservation Service from the beginning.

The commercial nursery business of the United States is big business. It involves large acreages of land and very great capital outlays. Productive soil is the nurseryman's most valuable asset. It is his basic capital investment. As such, it cannot be allowed to deteriorate in productivity or to erode away.

Dr. White and his associates are fully aware of this situation and the impending dangers to the industry for which they are responsible. They have observed the rise and fall of highly respected commercial nursery enterprises, are able to trace these failures to continuous cropping of land, to the resultant loss in soil fertility, and to soil erosion. They realize that something must be done to bring this forcibly to the attention of those concerned.

Commercial nurseries, while highly specialized enterprises, require much the same sort of soil conservation

program as do farms. Consequently, a considerable number of nurseries have been planned by the Service during the past few years. Several of these have been observed and studied by Dr. White and conservation's importance to the business fully appreciated. The Service was invited to provide a speaker on the subject of conservation planning in commercial nurseries at the National meeting of the American Association of Nurserymen, held in Boston, Mass., in July 1947. A. D. Slavin, chief, regional nursery division of the Milwaukee, Wis., office of the Service, was selected as the man to do the job.

Slavin's talk was enthusiastically received and created a great deal of interest among attending nurserymen. Slavin gave similar talks at several meetings of affiliated State associations during the winter of 1947-48. In the spring of 1948 the Service was asked to assist in preparing a bulletin which would be gotten out by the American Association of Nurserymen, primarily for members' use and information. Again, Slavin was drafted.

The result is a bulletin which would be a credit to any organization. Written for the layman and admittedly incomplete from a technical viewpoint, it is at the present time the most complete publication available on its subject. Unlike most bulletin material based on previously published technical material, it includes in one package not only popular information but also an original presentation of soil conservation planning techniques adapted to the specialized field of nursery work.—HARRY A. GUNNING.





*September  
1948*

# ≡ SOIL CONSERVATION ≡

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UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.



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WELLINGTON BRINK

Editor

Art Work by  
W. HOWARD MARTIN

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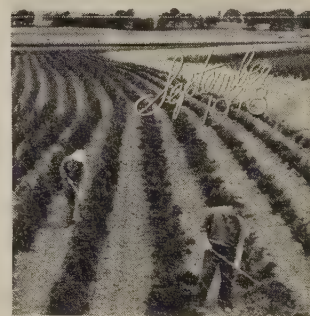
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**ABANDONED WHEATLAND PUT IN GRASS.**—Meat production can be increased from 10 pounds per acre to 50 pounds by seeding abandoned wheatland to grass, it has been found by R. H. Stark, SCS Nursery Division, Aberdeen, Idaho, J. L. Toevs, Idaho Agricultural Experiment Station, Moscow, Idaho, and A. L. Hafenrichter, SCS Nursery Division, Portland, Oreg. This can be accomplished at a cost ranging from 55¢ to \$1.60 per acre plus seed. Abandoned wheatland can be made to produce meat profitably if the land is in the unforested areas, where the rainfall is 8 inches or over annually and if the ranch has some ground that once was cropped, or can be plowed.

**CORN YIELDS AND TOPSOIL.**—Corn yields are reduced by 5 bushels per acre for each inch of topsoil lost, reports Orville E. Hays, SCS research, LaCrosse, Wis. Erosion is reduced 75 percent by strip cropping and 85 percent by terracing. Corn yields increased by at least 10 percent by strip cropping and terracing as a result of increased moisture and improved stand.



**FRONT COVER.**—A contour strip of nursery stock 100 feet wide on the D. Hill Nursery, Dundee, Ill. The sod strip to the right is in brome-alfalfa. "The commercial nursery business of the United States is big business," as Harry A. Gunning remarked in an article in the August issue. And it has found out that it pays to conserve the soil which is its chief asset.

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# STEALING A MARCH ON WIND EROSION

By H. H. FINNELL

**W**IND EROSION IS TRICKY. And if you aim to overcome it you had better meet it on a ground of your own choosing. This has recent proof out of some studies of land use experience in the old dust bowl.

Back in the 1930's where Colorado, Kansas, and Oklahoma join was the starting place of many of the big dusters. Acting on the theory that there ought to be a lesson in what has happened since then on the lands of this area, we took a second look in 1947.

The first extensive conservation survey was made there in 1936 by Arthur H. Joel and party. Five thousand square miles of selected sample areas have now been resurveyed.

**I**N ELEVEN YEARS, land use changes were expected and many were found. They were due both to the urge for war production and to land deterioration through severe erosion damages. But farmers are a practical-minded lot. On the whole they have not attempted impossible feats of reclaiming and reconditioning the abandoned lands. The least damaged of the better class land was wisely selected to be brought back into cultivation.

Now, if this same good judgment used in the matter of restoration were applied likewise to the choice of new lands to cultivate, the battle for permanent control of storm dust in the Great Plains would be over.

The one important act of choosing a land use within the capability of the soil outweighs any erosion control practice or combination of them as applied to the marginal lands of the Great Plains. On particular soils it is the No. 1 control practice.

It is simple to set out boundaries between arid and semiarid climatic belts, between brown and light brown soil belts, between old established dry farming areas and the newer ones. But the soils are not blocked off that way. No general divisions of the wind hazard territory can serve as a guide to proper land use decisions. Good, bad, and indifferent soil groups are intermingled athwart any area boundary you can devise.

Therefore, we are forced to fall back on the specific physical descriptions of soils if we want an infallible basis of discrimination under any given climatic condition. Up to now we do not have a better land use guide than the actual recorded

performance of different soils under identical climatic and use conditions.

Our recent investigations in the wind erosion areas show that they do behave differently. For example, the deep, nearly level, heavy-textured wheat soils were not damaged to exceed 2 percent by wind erosion severe enough to cause abandonment. Medium depth soils of the same kind were so damaged up to 24 percent of the tilled acreage, shallow soils up to 41 percent.

In further contrast, the shallow, moderately-sandy soils of gently rolling topography suffered those extreme damages in several counties on more than 69 percent of the plowed acreage. These percentages represent the extent to which different lands were decisively put out of business by erosion in a short time. They were idle throughout the war period and still remain abandoned.

On the other hand, many thousands of acres of the better and only slightly damaged lands which were abandoned due to financial distress have come back into cultivation with comparative ease. We call them high capability lands. They *are* high capability lands. If we had to meet the problem of wind erosion only on these choice lands it would be easy.

With conservation skill, wind erosion can be successfully met and overcome on lands of low capability for cultivation. But on soils which have proved themselves over and over to have no capability for sustained cultivation it is a hopeless struggle bound to end in failure. We might call them the "one-shot" lands.

Ordinarily, the acceptance of proper land use has been thought of as a desirable step for starting

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Note.—The author is research specialist, Soil Conservation Service, Amarillo, Tex.



on a conservation program. In the case of marginal lands of no capability for cultivated crops, the land use decision becomes the most critical step in the program. The consequences of a wrong decision are too drastic and irrevocable.

This thing of destructive land use has become a widespread problem along the borderlands of transition from semiarid to arid climate. The fact must be accepted that low grade lands can be cashed in under certain conditions. To wear the new off these "one-shot" lands has been found to be profitable while prices are high. The cruel joker in this plan is that the new wears off quickly. When a landowner decides to take his one shot, the brief period of profits is soon past. It does leave the land "shot."

The capacity to grow the good grass it once had has disappeared. Long periods of complete idleness generally follow the abandonment of cultivation. The effect is the same as swapping off the long-sustained usefulness of the land for growing grass to take instead a quick but final profit on its ownership.

According to the records of the 1930's three-fifths of all the storm dust that plagued the southern plains came from low grade lands which were in the process of their final breakdown leading to discard. At least this much of the dust of any future storm threats could be stopped before it started if only the lessons of past experience were heeded.

## DISTRICT PROFILE

DENNIS  
GETCHELL  
—  
Maine Man

**I**F YOU HAVE traveled northward into Maine on the Bangor and Aroostock Railroad, chances are you have sampled one of the products of Dennis Getchell's farm in the town of Limestone. For Dennis Getchell has been supplying the railroad's diners with selected baker potatoes for several years.

Getchell, chairman of the Central Aroostook Soil Conservation District, president of the State Association of Soil Conservation Districts, and a director of the National Association of Soil Conservation Districts, grows about 75 acres of po-



Getchell explains his conservation program to group of Canadian farmers.

tatoes each year. To add an international flavor, he grows 10 acres of seed potatoes in New Brunswick. But he has a lot of other interests, too, and these interests are shared by his wife, Lula.

Potatoes now share the spotlight with a herd of purebred polled Herefords, which has been a-building for several years. The Getchells augmented their herd last winter by purchasing a



Dennis F. Getchell.

quantity of calves in the course of an extended automobile trip.

The Herefords came into the farm enterprise for three reasons. For one, new pastures were developed on lands subject to severe erosion if cropped. "Secondly," Mr. Getchell said, "I love animals and wanted livestock on the farm; and, thirdly, although I probably should list this first, Lula had always wanted a herd of Herefords."

Fishing is another Getchell family interest. The farm purchased in New Brunswick, to grow seed potatoes in an isolated area free from disease, carried with it fishing rights on about a half mile of the Tobique River. The Getchells have built





Harvesting potatoes on the Getchell farm.

a camp on the banks of the river. Here they spend most week ends during the season, fishing for Atlantic salmon. Anyone lucky enough to be invited up for a week end is in for a treat.

In addition to his farming, soil conservation, and fishing interests, Getchell is director of the Bangor and Aroostook Railroad, Northern Telegraph Co. and Van Buren Bridge Co., and treasurer and manager of the Aroostook Potato Co., a firm that raises 100 acres of potatoes and does a shipping business.

Getchell's interest in soil conservation is not only national, but international. On several occasions, during the past 3 years, he has been host to Canadian agricultural workers at his home farm. His guests are shown conservation work on the land, told how soil conservation practices are improving Aroostook agriculture.

At national meetings, Getchell likes to tease western soil conservationists about the size of sprawling Aroostook County (4,190,000 acres) "so big we had to carve it up into three soil conservation districts." And he is never out-talked by fellow potato growers from the Northwest when comparative size, yield, quality, and price are up for friendly joshing.

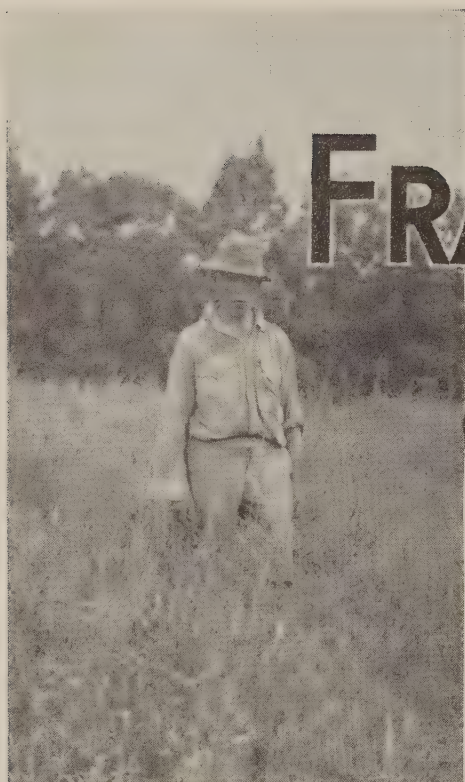
The Getchell home farm, developed by the father and grandfather of the present owner, includes diversion terraces, sod waterways, strip cropping, rotations and retirement of steep land to pasture in its conservation program. Getchell started conservation farming in 1940 when he became alarmed at developing gullies, and thin spots on the knolls. As a result of his experience he is today an outstanding local, State, and national conservation leader.

—WILLIAM B. OLIVER

**FERTILIZER EFFECTIVENESS.**—Fertilized, uneroded soil produced 1.5 tons more sweet corn per acre than fertilized eroded soil at Geneva, N. Y., according to John Lamb, Jr., SCS research. Fertilized uneroded soil produced 16.7 tons of cabbage per acre compared with 13.8 tons for fertilized eroded soil. The soils and fertilizer treatment were the same with each crop, the only difference being that the eroded soil had lost most of the topsoil, whereas the uneroded soil retained most of its topsoil.

**USE MORE BROMEGRASS.**—One acre of good brome-grass pasture will feed as much livestock as 1½ to 2 acres of bluegrass pasture, finds Maurice E. Heath, SCS Nursery Division, Ames, Iowa. Brome-grass makes a real contribution toward our effort for maximum food production and in making our land produce at maximum capacity.





# FRANK BIRD— *Soil Conservationist*

By R. Y. BAILEY

Bird standing in field of Caley peas that will be harvested for seed as one of his cash crops. Kobe lespedeza following the peas will add still more plant manure to the soil.

**N**ESTLED IN THE HILLS of north Georgia, the farm of Frank Bird is a fine example of the proper use and treatment of land. This small farm has only 20 acres of cultivated land, yet Bird is supporting his family and making the land better.

Bird spent many years as a school teacher in Georgia and California. He bought his 113-acre farm 12 years ago and worked out a farm plan with the Limestone Valley Soil Conservation District in 1940.

To me, the most interesting thing about the Bird farm is the fact that on a small acreage of cropland he follows rotations that meet the requirements set forth in land capability tables. Most of his cultivated land is in capability Classes II and III and is being well protected by rotations that fit the land.

The rotations are interesting because they are almost automatic. Four years ago Bird sowed wild winter peas (*Lathyrus hirsutus*) on all his cultivated land, and since then this legume has volunteered each fall.

When I visited his farm near the middle of May, Bird said, "I planted peas 4 years ago and they are still coming up. They get thicker every year." He harvests seed for sale, but does not need any

for use on his own land. He sows small grain for winter grazing or for grain, and seeds Kobe lespedeza on the grain and volunteer peas in the spring. This gives him a winter cover of small grain and volunteer peas and a summer cover of lespedeza.

Class II land is cultivated every other year and Class III land every third year. The ground is under protective cover the rest of the time. This rotation system requires a minimum of soil disturbance because the winter peas volunteer and the summer lespedeza cover makes seed the first year and volunteers the second year. When small grain is planted, it usually is drilled early in the fall before volunteer peas come up.

Land preparation for row crops is an important part of the conservation program on the Bird farm. He does not flat break his land. He beds his rows when legumes are ready to be plowed under. This operation covers the green peas in the beds so that they will decay, and leaves the land in a system of contour beds that greatly reduce runoff.

After the first beds have lain for a few days, fertilizer for cotton is applied in the furrows where the balks between the beds are plowed out and the land is rebudded. This second bedding operation brings back to the surface a considerable part of the plant material that was plowed into the

Note.—The author is chief, regional agronomy division, Soil Conservation Service, Spartanburg, S. C.



first beds. The material thus uncovered functions as a partial mulch and further reduces erosion.

The soil, Clarksville gravelly silty loam, has so much organic material in it that it has a "live" feel underfoot instead of the hard, crusty condition that usually is characteristic of such land.

Bird does not have terraces on some of his Class III land. He does all plowing on the contour, always keeping a contour-bed effect, and leaves buffer strips of unplowed vegetation at intervals on the slope. When asked about these strips he said, "They are not any definite width nor spacing. I just leave a few rows unplowed occasionally. I don't have much runoff and can't be losing much soil."

An important factor in the Bird system is that his contour bedding keeps his soil in place. He does not develop benches around field borders as so often happens where flat breaking is practiced.

Crop yields are increasing under this simple but effective cropping system. Land on which farmers in this section of Georgia often get less than 10 bushels of corn or about a quarter of a bale of cotton per acre from is making a bale and a half of cotton or 50 to 60 bushels of corn per acre. One field on which Bird produced about a bale and a half per acre in 1947 produced about a quarter bale per acre 12 years ago. At that time this land produced about 8 bushels of corn per acre.

Bird says his yields are still increasing and that he expects 2 bales of cotton per acre in 1948. He is a strong believer in soil conservation and says, "Farmers must cooperate with nature by putting enough organic matter into the soil to store water and to build up its fertility."

In addition to his 20 acres of rotated cropland, Bird has 6 acres of perennial hay (kudzu and sericea), 5 acres planned for orchard and vineyards, 8 acres in improved pasture, 72 acres of protected woodland and 2 acres in miscellaneous use. The planning service he received from the Soil Conservation Service through his district helped him to get better land use and a simple crop rotation that fits his conditions of small acreage and limited farm machinery.

Bird appreciates the value of woodland. He planted 3 acres of pine trees in 1940. All of his woodland is protected from fire. He is building a new home with timber cut from his own woods. Only the roofing was purchased. He built his own bedroom furniture, using home-grown timber.

His farm serves as a community demonstration of what can be done with land through intelligent use and treatment, but Frank Bird has made other contributions to public welfare. During the recent war, he sent five sons to the armed forces and his two daughters were employed at Robbins Field, Macon, Ga., where they did their share toward the prosecution of the war. The youngest son, who was too young to be away from home, assisted with the farm work while not in school.

Livestock is not a very important part of the income of the Bird farm, only three milk cows and two mules being kept. Two acres of cornfield beans planted each year make up a portion of the farm income. Beans are sold fresh and the surplus is canned on the farm. Last year, 1,500 cans of beans were sold in Dalton.



**Sericea lespedeza** is one of the two deep-rooted perennial legumes used for hay on the Bird farm. **Sericea** shown here protects a waterway.



When the Georgia Bankers Association selected farmers to receive their award for meritorious service in soil conservation, Frank Bird was among those selected from Whitfield County. The outstanding pioneer job he is doing is showing the way for others who have small farms, and amply qualified him for this honor. He has shown that even on a small farm land will pay for good treatment. His rotation includes enough ground cover, both winter and summer, to protect the land from erosion and to supply a sufficient tonnage of plant manure to the soil to make it rich. If his rotation is continued a few more years, his entire 20 acres of cropland will be as rich as a vegetable garden.

The theory that farmers who have small acreages do not have enough land on which to practice soil-conserving rotations is disproved here. The Bird family is producing 6 to 7 bales of cotton, 200 to 225 bushels of corn, 8 to 10 tons of hay, a considerable amount of winter grazing, legume seed for sale, and both fresh and canned beans are

sold each year. Farms of this size where all cropland is cultivated each year because farmers think there is not enough land on which to follow good rotation practices already are producing less than the Bird farm. Furthermore, the Bird farm is increasing in productive capacity, whereas other farms where land is being abused produce progressively less from year to year.

The man, Frank Bird, is an interesting personality. He has that look out of his eyes that belongs to those who can see far ahead. He has a love for good land that is based on intelligent understanding of what the soil needs and how it will respond when these needs are supplied.

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**MECHANICAL TREE PLANTER.**—Four million trees were planted with 16 mechanical tree planters during the spring of 1944, relate H. D. Bruhn and F. B. Trenk, Wisconsin Agricultural Experiment Station, Madison, Wis. The planting unit is built around a simple-bottom, triangle-type tractor plow. The advent of the tree-planting machine has developed definite and favorable trends in forest development. These trends embrace all classes of forest owners.



Caley peas were turned under here in preparation for cotton by bedding on contour. Balks will be plowed out, fertilizer for cotton will be applied in the furrows, and the land will be rebedded. Buffer strips of peas were left for added protection.



## A MEETING PLACE FOR BRAVE IDEAS

By WELLINGTON BRINK

**B**RAVE IDEAS and great heart go with all true pioneering. It was so at the clearing of the wilderness, and it is so at the new frontiers of science. So long as our people undertake to think with courage and with conscience, to step forth briskly along the paths of high adventure, there is room for cheer.

Today many minds and many wills are at work for the salvation of the human race. Never in history has there been so determined an assault upon the vast Unknown. Never has there been so great a challenge nor so much at stake. The peoples of the world must be fed and housed and clothed. There must be good ground under their feet, good food on their tables, good blue skies of peace and hope above their heads. We are beginning to move toward these ends, one step at a time. Already there is progress in soil conservation beyond anything previously achieved since the Garden of Eden. There is spectacular advancement in nuclear physics, in organic chemistry, in animal breeding and plant biology, in industrial management and political science. There is hardly a field vital to home and family untouched by the awakening of our times.

At Ohio University each year there is a Conference on Conservation, Nutrition and Health. It is a meeting place for the brave ideas and great heart of which I speak, and it is fathered by Friends of the Land.

This year's conference on June 26-27 followed the unique pattern of its predecessors. It brought together for the seventh successive year the newest techniques affecting the ecology of man and his environment. Again, as heretofore, it joined science, profession and philosophy in common cause against malnutrition, waste, and want. Once more, it sup-

plied a common denominator for research workers and social missionaries.

The Conference was important for honored names and timely topics: Dr. Frank Boudreau, of the Millbank Foundation, speaking on "The World's Food Supply"; Vincent Sauchelli, chairman of the fertilizer division of the American Chemical Society, talking about "Atomic Energy: Its Uses in Agriculture and Agricultural Research"; Dr. Clive Maine McCay, of Cornell University, discussing "Diet As a Factor in Aging"; Dr. Saul Boyk, of Purdue University, arguing the case for the utilization of valuable materials from municipal garbage and sewage—to cite but a few of the distinguished speakers and their themes. Short quotations from a few of the papers appear in this issue of *SOIL CONSERVATION Magazine*.

Even more important than the program was the audience: men and women who are leaders in their communities, officers of large corporations, farmers, scientists, educators, writers, students. They came from as far away as New England and California, for the fame of the conference is spreading. They asked questions, tied ends together, made major contributions to the fresh viewpoint on soil-health relationships.

One of the fine things about these annual Conferences is their testimony that Friends of the Land is capable of *doing* things.

First of all, the Friends have succeeded in directing the attention of the Nation to the pressure of the land problem. In so doing, they have drawn to their educational program the support of a large segment of the public press and civic leadership. Second, they have given to our country a distinctive and ably edited quarterly magazine, *The Land*, which brings the feel of the good earth to city man and country man alike. Third, the Friends have devised this extraordinary



annual Conference on Conservation, Nutrition, and Health which has gone beyond the early expectations in publicizing widely varied scientific studies of application to a common problem. If the Friends had done nothing more than this, they would have justified their existence as a conservation organization.

We can look forward to additional good works by Friends of the Land. For the Friends are as young as the land is old, and they bring with them brave ideas, love of fellow man, and the courage to explore.

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### QUALITY CONTROL IN TIMBER CROPS

"We shall have to harvest our trees in the future at a much younger age," Dr. Benson H. Paul, senior silviculturist of the U. S. Forest Products Laboratory, Milwaukee, told the seventh annual Conference on Conservation, Nutrition, and Health.

"The high quality timber we have been using represents the outer 200 years' growth, or more, of trees that are from 300 to 400 years old. Future lumber will have to be produced in stands less than 100 years old. To do this, foresters will have to supervise our planting and care of future timber crops. Experts will have to regulate the initial stocking, see that lateral branches are pruned from trees when they are very young, and take every step necessary to grow the trees at a uniform rate. Crop trees of only the best form must be selected, and these must be planted in sites that are best adapted to the given species."

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### WE ARE WHAT WE EAT

"Our health depends upon a sound and abundant agriculture producing foods of the best possible quality. Perfect health comes not from the medicines of the physician, but rather depends upon a sound nutrition," Dr. Jonathan Forman, editor of The Ohio State Medical Journal, told the

seventh annual Conference on Conservation, Nutrition, and Health, sponsored by Friends of the Land at Ohio University.

"Good nutrition, in turn, depends upon three factors: Good food, good digestion, and good muscular tone. But the greatest of these is good food. To maintain the quality of our food demands that we harvest, process, prepare, and serve it without destroying any of the elements that are essential to our nourishment, and that we eat a sufficient variety to insure that we get all of the factors that our bodies need. Nevertheless, all of these things may have been attended to and yet our diet may be inadequate because the soils upon which our foods were grown did not have the essential elements in them.

"A hungry, under-nourished people are half-sick people, physically, mentally, and spiritually. They are the real menace to our Republic. Through their apathy, their ignorance, their lack of intelligence, their deficient social judgement, their sexual immaturity, and their emotional instability, they fall prey to their psychopathic compatriots who can easily lead them into revolution or into war for their own selfish ends."

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### WORLD FOOD SUPPLY

"Since the beginning of the industrial revolution, no war, including World War II, has ever succeeded in stopping the increase of the world's population," Frank Boudreau, M. D., executive director, Millbank Memorial Fund and chairman of the Food and Nutrition Board of The National Research Council, told the Conference on Conservation, Nutrition, and Health.

"In areas containing over half of the world's population the food supply before the last war was only enough to give an emergency subsistence diet as defined by the National Research Council. Of course, in such areas a small proportion of the people obtained more than the average and a large proportion obtained less. It is no wonder,



then, that high mortality, short lives, civil disorders, apathy, depression, and irritability are characteristic of the peoples of these areas in which half the world's human family exists. Another one-sixth of the world's population exists on the border line of hunger.

"Most fortunate are the world's people who live in areas where food supplies are sufficient to furnish an average intake of 2,500 calories per person per day."

Dr. Boudreau concluded that none of the difficulties in which the world is plunged today is beyond the genius of mankind to solve. "The intelligence that has brought our world to its present level of technological and cultural development is fully capable of mastering hunger, disease, and war. A good start toward world peace and plenty will have been made when our leaders turn from dealing with the symptoms of the neuroses that affect mankind to the satisfaction of man's fundamental needs of which the need for food comes first."

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## SOILS THAT MAKE CHAMPIONS

B. T. Abbott of the Southern Soils Service, Memphis, Tenn., told his audience at the Conference on Conservation, Nutrition, and Health the story of how he was able to win a score or more blue ribbons with his white-faced cattle the fourth year he had been using them to restore abandoned cotton land.

This soil expert insisted that soils can be, in many instances, rebuilt and that much of the talk about submarginal lands is in reality submarginal thinking. Farmers need to know more about the role that minor minerals play in soil fertility, and they need to know it now, Abbott pointed out. Like farm experts everywhere, he insisted that the greatest crop for the South in the future will be grass. More grass means clear water in the streams, more organic matter in soil, improved bacterial action, better water reten-

tion, and a better way of life for all concerned.

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## ATOMIC ENERGY: ITS USES IN AGRICULTURE

Tagged atoms, called radioisotopes, are now being produced in an abundance and at low cost for scientific research purposes by the Atomic Energy Commission at its Oak Ridge plant, explained Dr. Vincent Souchelli, Chairman of the Fertilizer Division of the American Chemical Society, Baltimore, Md., at the Conference on Conservation, Nutrition and Health.

"Reaction piles give agricultural scientists powerful new tools with which to probe into the secrets of Nature. New techniques are being developed which employ these radioisotopes to trace the behavior of individual molecules and atoms throughout complex chemical reactions in the soil, in the plant, and in the animal or human body.

"The Bureau of Plant Industry at Beltsville is studying the influence of radioactive materials on the germination of seeds and the growth of crop plants."

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## CAN FOOD KEEP THE PEACE?

"It is possible to give 3,000,000,000 people an excellent diet at a cost that all can afford," Dr. C. F. Schnabel, nutrition chemist of Kansas City, told the seventh annual Conference on Conservation, Nutrition, and Health.

His plan is to use grasses of the highest protein content which, if properly handled at just the right time, may be the answer to the almost unlimited growth of our population. A method for taking the important food elements out of grass has been worked out by Dr. Schnabel. This process separates the elements from the grasses into four parts, viz: (1) fiber which has enough good food value left in it to be returned to the farmer for cattle feed; (2) a water-soluble fraction



containing the water-soluble vitamins and the minerals; (3) a fat-soluble fraction containing all the fat and fat-soluble vitamins; (4) a portion which is about 60 percent protein.

With this method, says Dr. Schnabel, it would take only a few farmers to feed thousands of people. A complete day's ration could be produced for 16 cents and at a return of \$2,100 per acre.

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## CONSERVATION, SECURITY AND SURVIVAL

"Freedom from want is the aim of all people. Civilizations are largely based on the ability to secure food. The fertile lands of the world are occupied and man must work out his security and salvation on the land which he now holds. Conservation, security and survival will probably be one and the same," Ollie E. Fink, executive secretary of Friends of the Land, told the Conference on Conservation, Nutrition, and Health.

"One of the principal objectives of the Friends of the Land is to inform citizens of town and country—that in the final analysis, conservation is more important to the man who lives in the city, than it is to the man who lives on the farm. We explain it this way—in pioneer days, 19 people worked on the soil to produce enough food and fiber for 20 people; one was free to live in the city. Seventy-five years ago, 8 farmers with their new steel plow were able to provide for 10 people; 2 people lived in the cities.

"Then came the inventors who made the modern city possible. One farmer today with his tractor, his combine, and other 'mechanical slaves' provides for four of us. The farmer eats first—and farm production beyond the needs of the farmer and his family is surplus. It is the surplus which makes life in the city possible. If there is no farm surplus, there is no city. The farmer may

long exist after the city man starves. Without conservation, fields formerly fertile are now unproductive, and so it is only through conserving the soil today that we provide the surplus which enables cities to continue to exist. Therefore, conservation is of greater importance to those who live in cities than it is to those who live on the farms."

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## HEREDITY AND SOIL

"Today in the United States our replacement population is coming increasingly from those areas in which the over-all situation is least satisfactory in terms of our vaunted American standards of living," Robert Cook, Washington editor of the *Journal of Heredity*, told the Conference on Conservation, Nutrition, and Health. "Our next generation is going to be recruited from the Class IV, V, and VI land areas. We are breeding, therefore, for a type which will survive under submarginal conditions. And in the lush areas we are not raising an increased percentage of people.

"If we come realistically to grips with the problem of quality and quantity population in such terms, we can begin to deal realistically with plans to create the champions that are to occupy our champion-building soil. The future of our human race is on the farm and not in the city. And what happens to our farming population as it responds to environmental changes will determine our future."

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**For the first time in the history of the Conference, all proceedings will be brought together and made available in book form. The introduction will be by Louis Bromfield. Copies may be purchased from Friends of the Land, Columbus 1, Ohio.**





Leaders in soil conservation project of Young Citizens' Leagues. Front row: E. C. Opliger, Miss Julia Haehner, Miss Lillian H. Schafer, I. J. Bibby, Mrs. Doris Broadwine, Miss Jule Ensteness. Back row: Ross D. Davies, Miss Marjorie Leesch, J. F. Hines, C. I. Krumm.

## THEY LEARNED ABOUT THE LAND IN A BIG, BIG WAY

By LILLIAN H. SCHAFER

Supervisor of Elementary Education

South Dakota Department of Public Instruction

SOMETHING over 30,000 South Dakota rural school children in all grades know a lot more about soil and water conservation today than they did a year ago.

Even so, more than one county superintendent of schools still wonders whether the teachers or the pupils learned most. Not that the youngsters didn't learn plenty. But the teachers had to get the information about conservation and how to teach it in order to carry on.

In any event, there is no doubt that the understanding of South Dakota's soil and water re-

sources and the need for conserving them is much more widely understood than ever before, because the children themselves wished it so.

This all began in May 1947 when the delegates at the South Dakota Young Citizens' Leagues convention at Pierre voted to adopt soil conservation as the major project for the 1947-48 school year. *Their action gave the State the most widespread, concerted effort at conservation education in the northwest. Possibly in the whole Nation.*

Just how extensive it was can be judged by the character of the Young Citizens' Leagues. Each rural school has a chapter. Altogether, there are 3,650 chapters in the State, with 38,650 members. Their purpose is to acquaint the children with civic functions and problems, so that they will be better



prepared to be useful citizens. The children themselves, through their elected delegates to the State convention, select the activities they engage in on a State-wide basis. The teachers help them carry out the projects as part of the regular school courses.

Soil conservation was proposed as the project by Beverly Aadland, a delegate from Day County, where E. C. Opliger is county superintendent. The Day County delegates had behind them the experience of 6 years during which the schools in that county had made use of a 6-week conservation unit in their science courses. Miss Aadland presented the project well, and it received more votes than the other three proposed projects combined.

During the year that followed, fully three-fourths of the chapters of the League actively participated in the conservation course of study. They took tours to observe conservation practices and erosion problems. They prepared exhibits—scrapbooks, posters, soil maps and profiles, model farms, farm lay-outs, grass herbariums and essays—for county, circuit, and state-wide contests.

"Its effects are far more widespread than most people realize now," Mr. Opliger said this spring about the project. "I believe, for one thing, that it has done more to make the public appreciate the worth of the Young Citizens' Leagues than any other project they have undertaken."

Further than that, it was a project of such widespread interest that it brought more people into contact with the Young Citizens' Leagues than any previous project. The Greater South Dakota Association supplied funds for circuit and State awards. Soil conservation district boards of supervisors, several Kiwanis clubs, and an Izaak Walton League chapter supplied county awards. Soil Conservation Service personnel, county agents and Extension Service specialists helped the school authorities organize the project, gather materials, provide reference information, orient teachers, and outline activities. The State Fish and Game Commission bought booklets for use by the schools. Farmers guided pupils and teachers on visits to their farms, where they studied the application of conservation.

As executive secretary of the Young Citizens' Leagues, it was my job to start the project on its way. The State Superintendent of Public Instruction, as State Y. C. L. chairman, appointed a committee of three county superintendents, who bore the brunt of working out the organization

of the project, getting the necessary aids and materials, and in general "spark plugging" the whole program. This committee consisted of E. C. Opliger of Day County, Miss Margaret Long of Beadle County, and Mrs. Ellen Scheel of Stanley County.

Together with Soil Conservation Service employees, Extension Service specialists, members of the State Department of Public Education and others, the committee worked out the program by late June last year. It outlined the conservation education activities considered suited for grade school children, such as building models, essays and poster contests, drawings, scrapbooks, and so on.

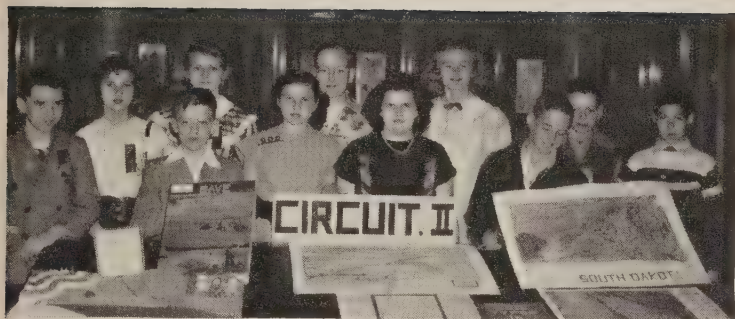
This committee also made arrangements for the necessary competition in the various activities. The State was divided into 6 circuits of from 11 to 13 counties each, with a county superintendent as chairman for each circuit. In each county, the competition was between schools. The best scrapbook model, essay, poster or other exhibit item from each county competed in its circuit contest. And the best item from each circuit made up the circuit's exhibit for the State title at the annual convention at Pierre May 3 and 4 this year.

County superintendents discussed the project at their annual meeting at Deadwood in June 1947. At that time, a display of conservation information materials that had been assembled by the Soil Conservation Service was exhibited, and each superintendent was given a packet of such materials. In turn, the county superintendents outlined the program to the teachers at their institutes just before school opened.

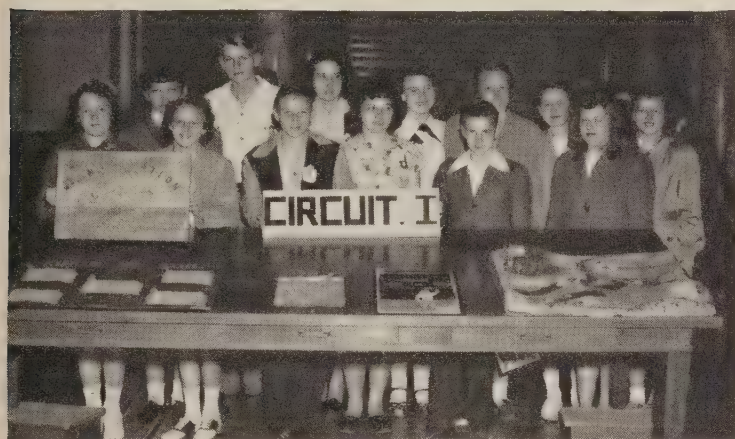
Some of the institutes devoted a full day to the conservation project, others gave only half a day to it. They all followed the same general pattern, however. This was an explanation of the fundamentals of soil and water conservation and of various devices that can be used to teach them to the children. Usually both the county agent and the local Soil Conservation Service employee took part. The extension soil conservationist also aided with some of the institutes.

When a full day was devoted to conservation, the preparation of the teachers was naturally more thorough. One of the best examples of this came in the report from Hand County. There, the basic information was given in the morning. In the afternoon, the teachers went to the field. They were taken to a farm where a complete conserva-

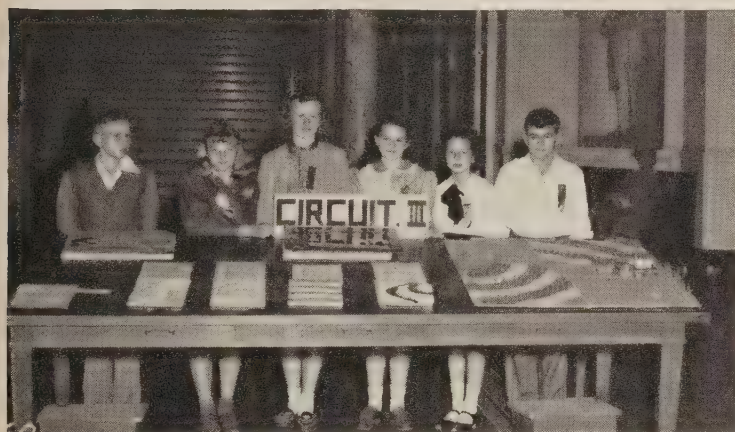




**Winner was Circuit II, representing schools in Brookings, Lincoln, Turner, and Yankton Counties.**



**Part of exhibit by Circuit I, second in competition at Young Citizens' Leagues state convention. Counties represented: Roberts, Grant, Clark, Brown, and Day.**



**Circuit III was third-place winner. Counties represented: Beadle, Hansen, and Brule.**

tion plan had been worked out. They were shown the map of the farm, while the meaning of land capabilities was explained as were the reasons for adopting the conservation practices that had been and are being applied. They saw how the plan was being carried out on the land. It is reported that, far from worrying about getting their shoes dirty trudging over the fields, these teachers were eager for more such information.

The county superintendents generally followed through with help to the teachers. For example, Mr. Opliger reported that as each school in Day County was entered in one or more project activi-

ties, each pupil received a button that proclaimed that he was participating. He said, too, that letters were written to all farmers cooperating with the Day County Soil Conservation District, asking them to help the children with the project. The result, he said, was that the teachers received unusually fine cooperation when they took the pupils to the field.

Mrs. Bert L. Hall, county superintendent for Brule County, had "one up" on most of the county superintendents. Her husband is an employee of the Soil Conservation Service, actively engaged in helping farmers conserve soil and water.

"I've been exposed to conservation education for a long time," Mrs. Hall remarked. "It was only natural that I should become interested. As a result of my past experiences, I was able to suggest field trips the teachers might arrange, suggest outlines for essays, and provide lists of conservation materials that also told where to get them."

The State Department of Public Instruction included suggestions for the project in its news service for county superintendents, issued every 6 weeks. And the 67 county superintendents included teaching suggestions and reference material in their news service, also issued every 6 weeks.

There are some fine examples of individual accomplishments in teaching, too. One is reported by Miss Norma Koehne, county superintendent of schools for Kingsbury County. It concerns the Little Rock school, which spent much of its project time gathering material for a large, attractive conservation scrapbook. Fine as it was, however, it didn't quite get to the final contest at Pierre.

"The whole community took part in the project," Miss Koehne said. "Parents seemed as much interested as the children. The scrapbook contains pictures of these parents, together with their statements about conservation.

"It also contains autographed pictures and letters complimenting the school on the Leagues' conservation project from the Governors of North and South Dakota, Montana, Wyoming, Nebraska, Minnesota and Iowa. The children got these pictures and letters on their own initiative.

"This is a county where the soil conservation district had been organized only last fall. Work on the school's conservation project was also an education to the parents."

Among the superintendents interviewed about their experiences, there was about an even division among those who favored handling soil conserva-



tion as part of the children's science course and those who favored making it a part of as many subjects as possible. It seemed to me, however, that there was more enthusiasm about the latter.

As I mentioned earlier, the Day County schools have been using a 6-week unit for the last 6 years. There, the teachers have been able to get a firmer grasp on the subject as the result of the experience. As Mr. Opliger put it, the conservation project was just taken in stride in Day County since it already was part of the school's program.

Mrs. Scheel expressed the opinion that handling the project along with all the other subjects gave the children an opportunity for self-expression. It was made part of the English course.

"When it is handled this way," she said, "it enables the pupil to see the relation of his school subjects to the everyday practical things of life. We had good success with getting the older children to read bulletins and report on them orally as part of their public speaking."

Miss Genevieve Arntz, county superintendent for Brown County, is of the opinion that "if conservation is taught as a unit, it is studied intensively for a short period and then forgotten. But if you start in fall and bring it into everything that is taught, you maintain interest through the year.

"The children loved it. It gave them an understanding of the life around them and of land-use problems in the county."

Soil conservation is so large a subject and the time for preparation was so short that it was only natural that there was a good deal of variation in the accomplishments of the schools. Generally, teachers were unprepared for teaching conservation. They had little idea of what it is or where to get the information. Not all of them had the imagination to apply the information they were given to the surroundings. As an example, one superintendent remarked that it was too bad that the project had not included forest conservation. She had not seen that in her territory forest conservation is a prime soil conservation measure—that keeping the forests thrifty provides the necessary cover to control runoff and check erosion.

Superintendents agreed that two things are needed. One is training teachers in the techniques of teaching soil conservation, the same as they are taught how to teach the other sciences, English, or geography. The second is the need for more

teaching materials and aids on soil conservation. The Soil Conservation Service, Extension Service, and the State College were of great help, supplying information on the availability of materials and even supplying some of the actual materials themselves. But the lament over the shortages of such teaching aids was general.

So you can see that carrying out so widespread a project was not without its problems. The results, however, were well worth the effort. Where, at the start, the teachers were dismayed over the prospects, they have become interested and there was strong sentiment for continuing conservation education. Many expressed their belief that conservation should have a larger place in schools.

As for the youngsters? The delegates at this year's convention voted to continue the conservation project. This time it must be labeled "minor," since the Leagues' constitution provides that a new major project shall be selected each year. Nevertheless, it caught the imagination of both teachers and pupils well enough in the past year to assure that conservation education will receive more attention than it ever did in the past. It definitely is part of the process of preparing the youngsters to be useful citizens.

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**1948 GOLD MEDALIST.**—The 1948 John Deere Gold Medal has been awarded by the American Society of Agricultural Engineers to Dalton Giles Miller. For nearly 4 decades Mr. Miller served continuously in the Department of Agriculture, until his transfer in 1946 to the Public Roads Administration. He started work in the Department with the Division of Irrigation and Drainage, following its organizational migrations from the Office of Experiment Stations, through the Bureau of Public Roads, of Agricultural Engineering and its successor alignments, to the Soil Conservation Service. He became a national authority on various phases of drainage.

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**GRASS TOPS ALL USES.**—Grass provides a larger source of revenue to Texas ranchers and farmers than does any other land use within the State, avers W. M. Nixon, SCS, Fort Worth, Texas. Grass, moreover, when properly managed, is a major factor in conserving soil and moisture and in maintaining and increasing the productivity of the soil.

Native pastures throughout Texas do not provide year-round green forage. In order to have nutritious, palatable grazing throughout the year, supplemental grazing crops are often used. Fortunately, most of the best adapted supplemental grazing and feeding crops are also soil-conserving and soil-improving crops.



# COLORADO'S GREAT "WEEK"

By VIRGIL S. BECK

COLORADO ALREADY is shaping up plans for its third annual Soil and Water Conservation Week scheduled for next February. The week will be held in conjunction with the annual meeting of the National Association of Soil Conservation Districts in Denver.

The success of the second annual observance in Colorado, February 15 to 22, can be attributed to careful advance planning, the full cooperation of all agencies concerned, and a lot of hard work.

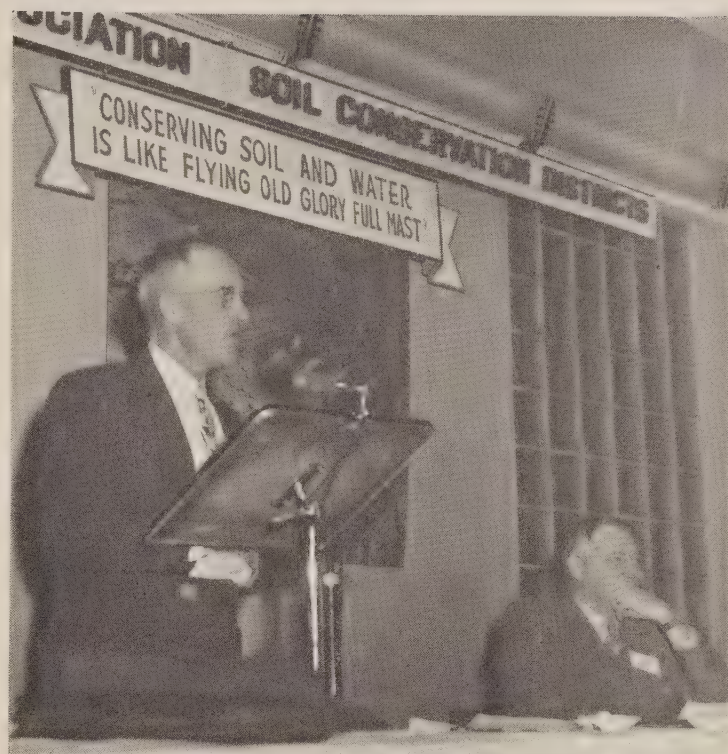
The Colorado USDA Council was designated as the sponsoring organization. Kenneth W. Chalmers, SCS State conservationist, and Charles Terrell, acting extension conservationist, were named co-chairmen. Committees and subcommittees were set up to handle press, radio, exhibits, speakers, education, and so on. Thousands of letters inviting participation in the observance were sent to business organizations, schools, civic groups, and others, and many personal contacts were made by committee members.

A month ahead of the Week, spot news stories, often with pictures or mats, began going to all Colorado daily and weekly newspapers. Farm publications serving the State featured soil and water conservation articles. Most radio stations carried daily announcements, and several business firms used enclosed "stuffers" in their letters circulated to promote interest.

Note.—The author is head of current information section, Soil Conservation Service, Albuquerque, N. Mex.



Kent Leavitt, president of National Association of Soil Conservation Districts, speaks at Denver meeting. Denver will be host to the National Association in February.



Walter A. Groom, president of Colorado Association of Soil Conservation Districts, addresses annual meeting.

The Week's observance was highlighted by the 2-day annual meeting of the Colorado Association of Soil Conservation Districts in Denver, with 150 district supervisors from 50 of Colorado's 75 districts attending. Governor Knous and Louis Bromfield were the principal speakers at the Association banquet over which Walter A. Groom, State Association president, presided. Kent Leavitt, president of the National Association of Soil Conservation Districts, was the featured speaker on the second day.

The banquet was marked by the announcement of a \$2,500 soil conservation contest by Lowell Watts, farm program director of radio station KLZ, and Palmer Hoyt, publisher of the *Denver Post*. Under the contest rules, \$500 cash awards will go to the five soil conservation districts in Colorado doing the best conservation job in 1948.

Just prior to the observance James H. White, editor of *Western Farm Life*, and the late Hal Renollet, farm program director of radio station KOA, announced a "S—W—A—P" program, the letters denoting "Soil, Water, Animals, People."

Leavitt and Bromfield talked to several groups while in Colorado, and the *Denver Post* and *Rocky Mountain News* gave extensive coverage of the Association meeting and the Week's observance.



While Denver was the hub of operations, there was hardly a city, town or village in Colorado which failed to stress the importance of soil and water conservation through every available media.

Scores of daily and weekly newspapers carried illustrated feature articles about conservation accomplishments in local districts. Most editors wrote editorials stressing the importance of soil conservation, and many newspapers used conservation quotations as "fillers" during the Week. State newspapers carried 174 locally-sponsored soil-conservation advertisements for a total of 3,700 column inches.

Nearly every radio station in Colorado featured appropriate programs during the Week. Practically all farm programs on stations KOA and KLZ in Denver were given over to soil conservation for the entire week. Transcribed programs by Secretary of Agriculture, Clinton P. Anderson; Hugh Bennett, Chief of the Soil Conservation Service; M. L. Wilson, Director of the U. S. Extension Service and several others, were carried by stations throughout the State.

Motion pictures on soil conservation were shown in public theaters, and before schools, civic clubs, churches, fraternal organizations, war veterans, women's clubs, Boy Scouts, and farm organizations. Attendance ran high in the thousands.

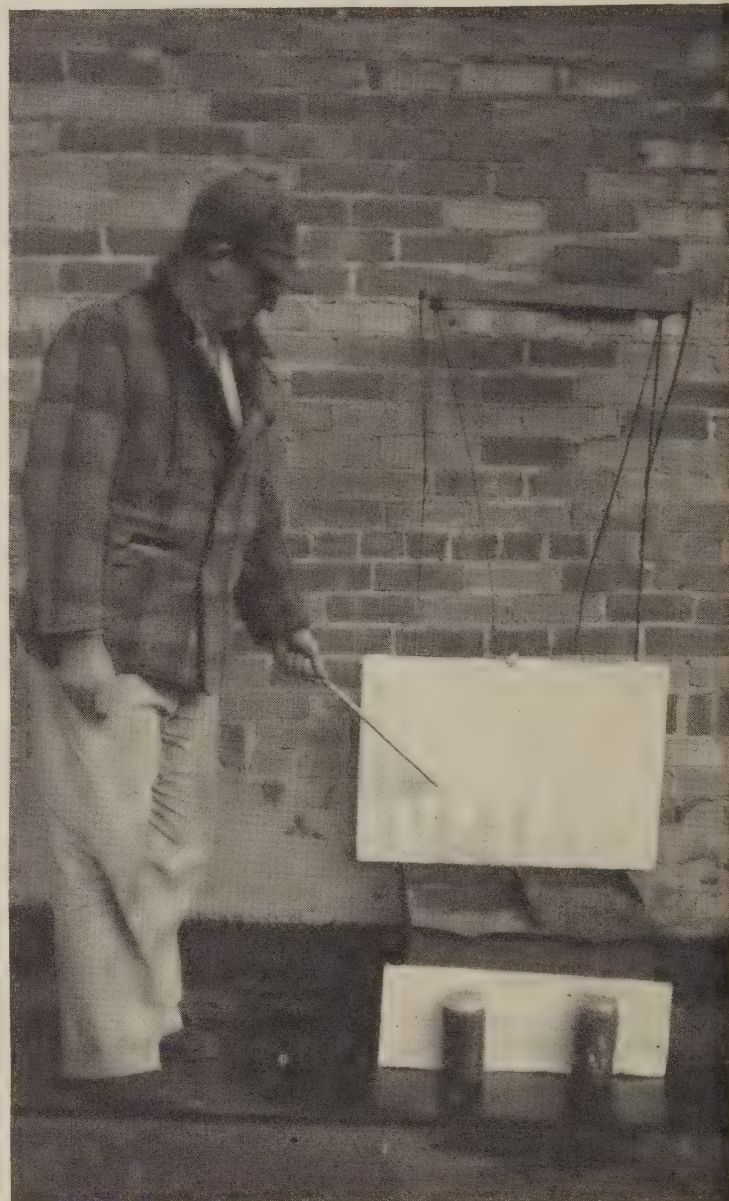
Scores of conservation talks were made before schools, civic clubs, PTA organizations, and sportsmen's groups such as the Izaak Walton League, Rod and Gun, and others. Louis Bromfield addressed the Broadmoor and Pike's Peak Garden Clubs in Colorado Springs, and Cyril Luker, regional conservator, spoke before several farmer and civic club groups in Trinidad and Grand Junction.

Various types of exhibits and displays were featured at the 2-day meeting of the Association of Soil Conservation Districts in Denver, and in banks, newspaper offices, and other public places in many parts of the State.

In addition to hearing conservation talks and seeing conservation movies, many schools conducted soil conservation essay and poster contests.

When delegates to the National Association of Soil Conservation Districts convene for the annual meeting in Denver next February, they will find a State thoroughly alert to the importance of conserving soil and water and eager to cooperate in strengthening the district program of better land use.

## WESTERN GULF



**A. F. Urbanovsky, conservation aid, demonstrates operation of device he made to show effect of rain on bare and unprotected soil.**

**SEEING IS BELIEVING.**—A home-made device that simulates the erosion of soil by rain is proving of practical value in interpreting the research work of W. D. Ellison for farmer groups and for businessmen attending service club meetings.

Built by A. F. Urbanovsky, conservation aid, the "rain machine," as we call it, is a welded metal box 18 inches long, 20 inches wide and 7 inches deep. It stands on 6-inch legs and has a detachable rack for holding the "rain" box.

A welded partition divides the box into two compartments, each 10 inches wide, the front being 1 inch lower than the back. A lip at the front of each compartment is fixed to hold the soil 6 inches deep and to let the runoff water flow into fruit jars. The soil in one compartment is protected with a cover crop of vetch or clover; in the other compartment the soil is bare.



The welded rack is bolted to the soil box with two wing nuts for easy assembling. It is made to hold the box of water directly over either the cover crop or the bare soil.

The water container is a tin box 10 inches wide, 18 inches long and 4 inches deep. It has holes in the bottom. Wool yarn is run through pairs of holes and cut off an inch below the bottom so that the water falls in drops like rain rather than in a stream.

A rectangle of cardboard covered with white paper is placed at the back of the box to show the erosive effect of raindrops on bare soil and the absence of erosion on protected soil. In actual operation it is advisable to use a cardboard partition to keep soil particles from splashing from the bare soil to the cover crop. Otherwise the runoff from the protected soil would also be muddied.

This simple device has helped us a lot in showing the erosive effect of rain on unprotected soil and the need of vegetative cover in reducing or preventing erosion. We have been gratified by the favorable comments from farmers and business men who have seen the apparatus in operation.

—ROBERT W. GILLESPIE, JR.  
Work Unit Conservationist  
Whitesboro, Tex.

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## SOUTHEAST

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**EXCELLENT EXAMPLE.**—The Supervisors of the Central Georgia Soil Conservation District have paid for 29 new subscriptions and 8 renewals to *SOIL CONSERVATION Magazine*. "All supervisors of the district subscribe to and enjoy the *SOIL CONSERVATION Magazine* so much we are glad to see many others subscribing to it too," writes H. G. Hatcher, secretary-treasurer.

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**SOMETHING OLD, SOMETHING NEW.**—A reasonable facsimile of a modern farm water-disposal system, including variable-grade, channel-type terraces and meadow outlets, was described 110 years ago in a letter from A. W. Veneable to the *Farmers Register*, published at Petersburg, Va. Paul Tabor ran across the letter in looking through an old issue of the magazine, dated February 1, 1938. The letter in part follows:

"A bed should be thrown up by the plough, 10 or 11 feet wide, graduated with sufficient fall to discharge the water, with a deep water furrow on the upper side of the bed leading to the first ravine, where there is a grass plat to receive the water and conduct it off. The bed is ploughed up with the rest of the field and cultivated with it, always taking care that the bed is left in the same place and the furrow opened with the plough. . . . The beds are made sufficiently numerous to drain all the water which falls on the land."

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**READABILITY WORKSHOPS.**—Dr. Paul Irvine, director of the Alabama Research Interpretation Council, and

Robert Leigh, his assistant, have completed a series of six 2-day writers' workshops for all field personnel of the Soil Conservation Service in Alabama. The workshops were designed to teach the principles of writing short, concise sentences, and using small words and personal references to make the writing more readable. The 123 Service employees in Alabama who received this type of training included the state conservationist, the two assistant state conservationists, the state soil scientists, the work unit conservationists, the P-1 soil conservationists, and those aides who occasionally write news columns or feature stories.

The Council estimated that Service employees through their news columns were reaching approximately 20 percent of the farmers before taking the course and have increased their reading audience to 38 percent of the farmers. In other words, they are reaching 85 percent more of the potential farmer audience than they were before the training was given. State Conservationist O. C. Medlock expressed the opinion that the course would result in more readable farm plans, as well as news material.

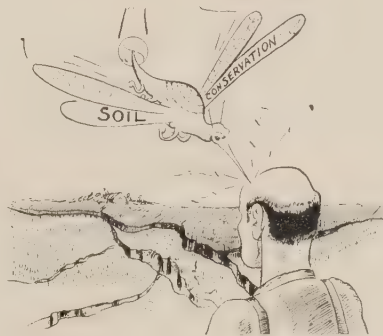
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**EDITORS GET SUBSCRIPTIONS.**—Supervisors of the Coosa River Soil Conservation District in Alabama have sent in subscriptions to *SOIL CONSERVATION* for 13 newspaper editors in the district. Fifty additional subscriptions will be sent to all the high schools in the district when the schools reopen in September, J. J. Stroup, district conservationist, reports.

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## SOUTHWEST

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**CONSERVATION IS CONTAGIOUS.**—When Bob Hardgrave's farm near Cottonwood, Ariz., in the Bridgeport Soil Conservation District was "remade" in a day, back in April of this year, the supervisors hoped that it would be more than just a show. They hoped that the soil conservation methods demonstrated there that day would sell other farmers on the value of land leveling, terracing, irrigation improvements and the various other practices that were put into effect.

Nor were they disappointed. Ever since, there has been a steady stream of inquiries and comments about the exhibition, and before the big day was over, one farmer made arrangements to have his land leveled, like the job that was being done on the Hardgrave farm.



**LAMBING GROUNDS BENEFIT.**—Felix Valerio and Daniel Romero, sheep ranchers in the Taos Soil Conservation District of New Mexico, saved at least \$200 this spring as result of a stock tank and diversion they built as part of their soil conservation plan.

With engineering assistance provided through the district, these men finished a small off-channel stock tank and diversion just before lambing time. The tank filled before lambing started and eliminated the need for hauling water to the lambing grounds—an operation which would have cost them \$200.

Two tanks had previously been built in the arroyo but had silted up. The off-channel tank, designed by the Soil Conservation Service, will give them service for a much longer time since the heavy material of the arroyo bottom will not pass through the diversion. The tank is located in dry winter range and used for temporary live-stock water during the winter and spring.

**CANAL LININGS.**—Water conservation research now under way in Cache County, Utah, may soon provide the answers to many western irrigation companies who know they are losing excessive amounts of water through seepage from their canals.

The Richmond Irrigation Co., whose canal has been in operation since about 1887, found out last fall that they were losing half their water supply in the first one-third mile of canal. James R. Barker, Utah State extension irrigation specialist, helped them measure their losses and then the board of directors went to Dr. C. W. Lauritzen, of the Division of Irrigation, Soil Conservation Service. Dr. Lauritzen, who has been experimenting with various kinds of canal linings in the SCS irrigation research laboratory at Logan, didn't know the answer but offered to try out some of his findings on the Richmond Canal.

With cooperation from the canal company and several firms which supply canal lining materials, Dr. Lauritzen has been installing 1,800 feet of canal linings, using varying thickness of concrete, concrete with different surfaces and reinforcement, different concrete mixtures and various methods of application. Some sections will have concrete sprayed on, others will be poured and still other sections will be lined with pre-cast concrete blocks.

Exact cost records are being kept and studies made as to their durability and suitability for use in that locality. They hope that before long recommendations can be made to other irrigation canal companies which will help solve this serious problem in the western states where water supplies are all too often limited.

**SMOOTH FLOW OF WATER.**—The leveling of 31 acres of irrigated land has resulted in increased crop yields which paid the cost of the work and showed a \$700 profit for the owner, Charles Aukland of Olney Springs, Colo., in a single year.

Aukland is a cooperator with the West Otero Soil Conservation District and asked the district and the Soil Conservation Service for help in improving his irrigation

system. Some parts of his fields were not getting enough water, while ponds were forming in the low spots.

His conservation plan included combining the two fields, leveling the land, removing old dikes and constructing a new irrigation system. The leveling cost \$1,800; high because long hauls had to be made in moving the dirt. But his 1947 crops brought him \$2,500, or \$700 more than the cost of improvements.

Besides that, Aukland reports that 30 percent less water was needed after leveling and much better crops were produced than in former years. Equally important, the labor cost of irrigating was reduced 50 percent, and Aukland is convinced that this more efficient use of water will help reduce the hazard of high water table which is prevalent in Growley County.

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## NORTHERN GREAT PLAINS

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**TREES TOOK A HAND.**—An 8-year-old shelterbelt got a figurative pat on the back recently from Ernest Fuhrman, near Norfolk, Nebr., a cooperator with the Stanton Soil Conservation District, for its part in helping him win the 1947 corn-yield contest sponsored by the Nebraska Extension Service.

Fuhrman's yield from a 10-acre plot was 106 bushels per acre, the highest in the county.

"Altogether, I had 90 acres of corn north of the shelterbelt, including the 10-acre contest plot," Fuhrman said, "and it was quite evident that the protection the trees gave the field made a lot of difference.

"The best corn was near the shelterbelt. The yield tapered off as the distance from the trees increased."

The whole field yielded unusually well, in view of the scorching, dry weather of July and August. Oats with sweet clover were grown in 1946 and 10 tons of manure per acre were applied in the spring. No commercial fertilizer was used.

The whole field was farmed on the contour, with a soil-conserving rotation since 1942, as part of the farm conservation plan that Soil Conservation Service technicians helped work out. The trees had been planted by the Forest Service in 1939.

Fuhrman says that contouring and the condition of the soil as a result of rotation made it possible for him to save a lot of the spring's heavy rainfall. Then, when the heat and dry weather came, there was a good moisture reserve, while the shelterbelt conserved moisture by protecting the field from hot, dry winds.



In addition to contouring, Fuhrman's conservation plan includes seeding of grass on land not suited for cultivation, establishment of grassed waterways, and improved pasture management. He plans to plant another shelterbelt.

**POTHOLE PROBLEM.**—Where formerly he had more than 30 part-time potholes scattered over his cropland to cause trouble, George Bakke now has one good-sized, year-around slough that is a good place for wildlife. Bakke farms near Stanley, N. Dak., and is a cooperator with the Two Creeks Soil Conservation District.

Bakke drained most of the potholes into the larger one as part of the farm conservation plan which he worked out with the help of A. P. Berglund of the Soil Conservation Service. The others were drained into a natural drainageway.

The Bakke farm of 2,300 acres, about half cultivated and half pasture, is a rolling glacial area, where there are numerous low places for water to accumulate with no way to escape. Generally, these potholes are full early in the season, when crops are planted, but dry up during summer.

"They caused a lot of trouble," Bakke said. "We had to farm around them in spring, and when they dried out later in the summer they were weed patches. Usually we couldn't get in to cut the weeds, so they went to seed, and that caused more trouble.

"Saving the cost of pulling out machinery after it got stuck and saving the cost of repairs so caused are worth the expense of draining. You can't always tell how close you can go to a pothole with machinery, and when you make a mistake, you're stuck.

"This year, however, we were able to farm the pothole areas with the rest of the land. And, you know, those potholes are about the best land on the place."

About 40 acres had been covered by the potholes. SCS technicians laid out the drainage system and supplied the technical services when it was built by a contractor.

The slough into which most of the potholes empty is one that could not be drained. It covers about 6 acres, and now has about 4 feet of water. The growth of weeds and other water-loving plants is appreciable already and gives wild fowl excellent cover. SCS men predict that small fur-bearers will appear there soon.

Bakke is following a grain-fallow rotation and is giving stubble-mulch fallow a trial on part of his land as part of his conservation plan.

He raises about 100 head of cattle, and follows a controlled grazing system under which he delays spring grazing until the grass has made a good start and then, during the grazing season, uses different parts of the pasture in succession.

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## PACIFIC

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**TRAGIC RIDE TO SEA.**—Enough soil to cover 44 farms, each 80 acres in size, to a depth of 6 inches went past Portland every day, on the average, during the Columbia River flood, according to measurements of the Soil Conservation Service.



**Aerial view, mouth of Columbia River at height of 1948 flood. Jetty in right foreground divides clear water of Pacific from soil-laden floodwaters of Columbia.**

J. H. Christ, Portland regional head of SCS, estimated the silt content of the river during the first 21 days of the flood at more than 78,000,000 tons, most of which represented valuable topsoil washed off farm and grazing lands throughout the Columbia basin. Much of this soil is now at the bottom of the Pacific. Large quantities, however, according to Christ, will be deposited in the form of silt and mud on bottomland farms along the lower Columbia, in drainage and irrigation ditches, on highways and city streets, where its removal when the floodwaters subside will add heavily to total flood costs.

Immediate value of the lost soil was set by Christ at 11 million dollars. He estimated the long-time loss to the nation in capitalized net earning capacity at between 75 and 80 million dollars.

At the peak of the flood, muddy waters of the Columbia discolored the ocean as far out as 20 miles. A huge, chocolate-colored fan at the mouth of the river, clearly visible from the air, was estimated to cover more than 300 square miles.

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## UPPER MISSISSIPPI

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**CODE OF AGRICULTURAL ETHICS.**—A good agriculturist recognizes the basic nature of the soil and its relationship to all life and the economy of living. He knows that all individual health, happiness and accomplishment as well as that of community, nation, and the world goes back to this indispensable soil.

Recognizing this basic nature of the soil, a good agriculturist will accept the philosophy of stewardship of the land, appreciating that he is holding in trust a parcel of the world's wealth to be used for the good of himself and his fellow man.



The good agriculturist will, therefore, accept the principles of proper land use to protect as well as better the land that he uses.

The good agriculturist will adopt accepted soil practices to protect himself, his neighbor, community, and the nation from flood menace and wind-blown soil. He recognizes that all floods have their origin at the place where the water falls and that all dust storms have their origin in the unprotected fields of the farm.

The good agriculturist will shun cash cropping except as it is a temporary loan from the great wealth reserve of our soil, a loan to be repaid with interest.

A good agriculturist will help to seek means which will prevent the unscrupulous from exploiting the wealth of whatever land is temporarily in their hands and see that no land is left as a bankrupt, tax-delinquent public charge.

A good agriculturist will recognize that the science of nutrition is yet in its infancy, but current observations indicate that there is an inseparable relationship between robust, individual and national health and a fertile soil well supplied with humus, organisms, and minerals.

A good agriculturist will, therefore, return to the soil all possible organic material as well as replacing depleted mineral reserves. He will do this by adopting the method best suited to the conservation of all elements in animal manures and animal and vegetable wastes, and he will refrain from the unwise practice of burning crop residues which should return to the soil as organic material.

A good agriculturist will appreciate that man has a place in the animal kingdom that he will only succeed in holding if he does his part in helping to maintain a balance in nature. If man fails to find and accept his place in the scheme of things, he will surely bring about his own destruction.

A good agriculturist will keep himself informed on the latest research development in his own field as well as to re-explore the old. He will exert individual leadership as well as cooperate in the community effort of his fellow man. Universal recognition and acceptance of this individual responsibility, coupled with a willingness to cooperate, will cure most of the social, economic and spiritual ills that at present beset our agricultural state.

Lastly, a good agriculturist accepting these responsibilities can insure to posterity an inexhaustible resource of rich and productive soil. In so doing he can assume his rightful place in the honorable and indispensable professions that serve all mankind.

—By Dr. M. M. Hargraves, Mayo Clinic, Rochester, Minn., at the annual meeting of Minnesota Association of Soil Conservation Districts.

**GOOD PASTURE SAVES CORN.**—One acre of bromegrass-alfalfa saved from 10 to 22 bushels of corn and cut the hay and protein needs in half, aver M. L. Peterson, G. M. Browning, and Rex Beresford, SCS research and Iowa Agricultural Experiment Station, Ames, Iowa. However, it took a longer time to fatten the cattle on pasture. Under normal conditions, this delayed marketing may be accompanied by a seasonal decline in prices received for fat cattle.

## RESEARCH POINTERS

Prepared by J. H. Stallings



**FLAME WEEDING.**—The use of flame for selective burning for the control of weeds and grasses within a specific crop is becoming a practical possibility. Flame weeding equipment consists of a tractor-hitch cultivator with burners that direct flames into the crop rows and between plants while the cultivator is mechanically weeding between the rows in the same operation. Flame cultivation has been tested and proved in many row crops.

**HOW TO BOOST FORAGE.**—Production of forage can be doubled and trebled by the establishment of a good stand of legumes and bromegrass on old blue grass pastures, according to Orville E. Hays, SCS research, LaCrosse, Wis. This is equivalent to doubling your pasture acreage.

Most pastures need 2 or 3 tons of lime per acre. They should be worked thoroughly with a spraytooth and disc; add 400 pounds of 0-20-20 fertilizer and seed to a mixture of 8 pounds of alfalfa, 5 pounds of red clover, 1 pound of ladino clover, and 6 to 8 pounds of bromegrass seed per acre. Plant small grain at rate of 1 bushel per acre for nurse crop.

**FALLOW FACT.**—Subsurface tilled, trashy fallow has been the only fallow which has not blown at some time or other at Froid since 1940, alleges T. S. Aasheim, SCS research, Bozeman, Mont. Some wind erosion occurred every year, but never on subsurface tilled plots where the stubble was utilized.

**VIGOR OF RANGE GRASSES.**—Vigor, composition, and density of the vegetation are the most important criteria of range condition, believe J. E. Weaver and R. W. Darland, SCS operations, Lincoln, Nebr. Vigor is commonly measured by the size of bunches or clumps and especially by the number of stems, the absence or presence of dead centers, and the partial or complete death of tufts or bunches. An excellent test of vigor under con-



ditions favorable for development is that of prompt renewal of growth in spring, after grazing, or after transplanting.

The degeneration of excellent or good native pastures and ranges into medium or poor ones is always preceded by a decrease in vigor of the most nutritious and best-liked grasses. Decreased vigor may result from overgrazing or from drought.

If this sign of range deterioration is observed and stocking rate is decreased or grazing deferred or the pasture completely rested, the range will usually recover and often improve.

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**PROPER STOCKING PAYS.**—A range properly stocked will produce more pounds of beef and stay in better condition than it will if overstocked, states George A. Wood, SCS operations, Pleasanton, Tex. The calf crop was increased 90 percent and beef production increased 2,140 pounds annually over a 3-year period by reducing the number of cows from 175 to 85 on a 1,270-acre ranch. The average weight of the calves was increased from 250 to 390 pounds. The condition of the range improved and the rate of erosion was reduced.

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**SOIL AND WATER LOSSES.**—Wheat alternating with fallow had a maximum soil loss of 80.8 tons of soil per acre for a 12-year period as compared with a total loss of 274.4 tons per acre for bare uncultivated land, states D. E. Stephens, SCS research, Corvallis, Oreg. The soil loss where wheat alternated with fallow ranged from 1.9 tons per acre to 80.8. The highest soil loss resulted in the lowest average yield. Spring wheat after fallow lost 23.9 tons of soil per acre over a 5-year period while spring wheat followed by Hubam clover turned under lost only 3.7 tons. These findings were developed in studies conducted in Washington, Idaho, and Oregon with crop residues, tillage, crop rotations, and other practices.

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**SOUND LAND USE BOLSTERS PASTURES.**—Sound land use and practical conservation farming is the first line of defense against erosion and provides an opportunity for greater production, alleges Harley A. Daniel, SCS research, Guthrie, Okla. Livestock make grassland useful and restore to the soil the life-giving elements used by growing plants. Soil conservation and balanced farming are being accomplished logically and profitably by sound development of the livestock industry.

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**COVER CROPS SAVE SOIL.**—Farmers should use more cover crops in corn and perhaps other row crops, according to H. A. Nelson, G. B. Browning, and J. B. Peterson, SCS research, Ames, Iowa. Cover crops protect the soil surface against the action of raindrops from August to May, during which one-fourth of the annual soil losses occur. They increase the soil's resistance to erosion during May and June by adding organic matter to the soil. One-half of the annual soil losses occur during this period. If the cover crops contain legumes they add nitrogen to the soil and increase its productive capacity.

**STUBBLE MULCH TILLAGE.**—Stubble mulch tillage, when properly practiced with the modified moldboard plow or some other similar surface implement, is well adapted not only for erosion control but also for crop production, finds Hugh C. McKay, SCS research, St. Anthony, Idaho. The modified moldboard plow leaves more straw on the surface, loses less soil and produces greater wheat yields than either the one-way disk or moldboard plow. The burning of crop residues was the greatest single factor causing soil loss. The highest soil loss, 14 tons per acre, occurred on the straw-burned, moldboard-plowed plots. The least loss, 1 ton per acre, occurred on the modified moldboard-plowed plots. The differences in grain yield resulting from various treatments are not large, but they are large enough to be significant.

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**ELIMINATE BITTERWEED.**—Bitterweed is troublesome on ranges that are in poor or fair conditions but not on ranges in good or excellent condition, aver O. L. Fenner, SCS, San Angelo, Tex., and E. B. Keng, SCS, Sonora, Tex. Building grazing lands up to good and excellent condition is the way to control bitterweed. Grazing lands get to be good or excellent forage producers, or they are able to stay that way, through sound range management. Use your forage so that grass growth and the amount of grazing even up and leave a pretty fair quantity of the plants to die and return to the soil year after year.

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**GRASSLAND CONSERVATION.**—Simultaneous improvement of the soil and grass and good grazing management are the principal foundation stones for conserving grassland, thinks W. B. Allred, SCS, Fort Worth, Tex. Grass is the chief capital asset on grazing land. It should be given the care accorded premium field crops. It dies or flourishes largely in relation to its treatment. Artificial aids to range improvement result in failure unless wise grazing is practiced. Where forage is grazed correctly, year after year, there is usually little need for artificial aids. Give the grass full opportunity to produce all it can and the soil and grazing industry will be safeguarded.

---

**DEGREE OF RANGE USE.**—Livestock have marked preferences for certain kinds of range plants, states Ben Osborn, SCS, Fort Worth, Tex. They will graze the more desirable plants before using the less palatable ones. It happens, too, that the plants which stock select for grazing first are generally the ones which are most nutritious and which have the capacity for producing the greatest volume of feed. Consequently, if range is to remain in condition to produce the greatest amount of the best quality feed year after year, grazing must be limited to avoid damaging the preferred plants.

The amount of grazing that has taken place in a pasture, with the degree of use that is safe for the kinds and amounts of vegetation present under the current season's growing conditions, can be determined by applying a simple scale developed for the purpose. The scale recognizes 4 degrees of use. Its use enables the ranchman to determine if his ranch is being "lightly," "moderately," "heavily," or "severely" used.



## Present Rate of Land Damage

1. Around 25 percent of the cropland of the country is being damaged at a rapid rate by erosion, according to the most recent estimates of the Soil Conservation Service. This is an area of approximately 115 million acres of cropland, located on farms totaling about 260 million acres. The productive capacity of much of this highly vulnerable land will be permanently damaged, and some 500,000 acres a year ruined for further cultivation, unless it is placed under a sound conservation farming system within the next 10 to 15 years. To be on the safe side—to prevent such irreparable and unnecessary waste—conservation treatment should be completed on these lands by 1960.

2. On another large area—around 120 million acres—of cropland, erosion is proceeding at a less rapid but still serious rate. This cropland is located on farms totaling some 250 to 280 million acres. To prevent serious or irreparable damage to these lands, they should be safe-guarded by conservation treatment within the next 15 to 30 years—by 1970 to be safe.

3. In addition to these two groups of land, some 215 million acres of cropland on farms comprising some 600 million acres are being damaged at a considerably slower rate. While a somewhat longer period of time could be used in treating such land, the Service is convinced it would also be more economical to complete the planning and application of basic conservation measures on these lands by 1970. They are often so intimately associated with the areas that are being damaged more rapidly that they frequently cannot be economically treated separately.

	Million acres
Cropland being damaged at rapid rate.....	115
Cropland being damaged at serious rate.....	120
Cropland being damaged at slow rate.....	215
Total .....	450

NOTE: All Soil Conservation Service estimates are based on the most accurate information available and are subject to change as more accurate information becomes available.

Light use is indicated when only the most palatable plants are grazed, and when portions of the area are untouched. Moderate grazing removes 50 to 75 percent of the current year's growth of preferred plants. Heavy grazing is indicated by the best plants being almost completely grazed, while the inferior ones are moderately used. Severe use is indicated when all plants are closely grazed with little distinction between palatable and unpalatable species.

**INCOME INCREASED BY IMPROVING LAND.**—A substantial increase in farm income can be realized on farms that adopt recommended land-improvement practices, believes Karl S. Landstrom, SCS research, Pullman, Wash. The increases are possible because the gain in farm receipts made possible by land improvement is more than enough to meet the higher total costs of production, including a charge for interest and depreciation on investment in fixed farm improvements required as a part of the program. The amount of these increases in income, even on the poorer land, is sufficiently large to indicate that the application of measures currently recommended would involve little risk of financial failure even though


the yield responses actually obtained turned out to be substantially less than those assumed in connection with the farm budgets.

**BEACHGRASS AND DUNEGRASS.**—The survival of transplanted clones of European beachgrass on coastal dunes is determined by maximum temperatures and not by precipitation, discovered Robert L. Brown and A. L. Hafenrichter, SCS Nursery Division, Portland, Oreg. Survival can be predicted from the average maximum temperature for 72 hours following planting. Survival of 50 percent may be expected when maximum temperatures do not exceed 55° F. A survival of at least 50 percent is required for stabilization of eroding dune sand.

The survival of American dunegrass was much lower than for European beachgrass. Dormancy at planting time is the chief factor of survival.

The addition of 40 pounds of nitrogen per acre is the most important factor influencing the cost of planting stock. Clones produced with nitrogen cost approximately one-half as much as those produced without fertilizer. Still more important is the fact that it brought production almost to its maximum in one year.



An aerial photograph showing a winding river flowing through a landscape with terraced fields. The terraces are light-colored, suggesting they are newly cleared or planted. The river is dark and meanders through the center of the frame. In the upper left, there are some small buildings and more trees. The overall scene depicts a rural, agricultural area.

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**OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE**

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.



# SOIL CONSERVATION •

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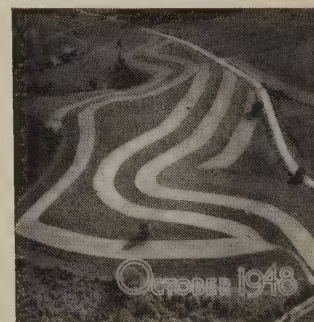
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**YIELD STUDIES.**—Iowans who farm on the contour get more corn, oats, and soybeans to the acre than those who farm up and down hills, finds G. M. Browning, SCS research, Ames, Iowa. In a 2-year average, contouring increased corn yields 5.7 bushels per acre and soybeans 2.7 bushels. The increase in oats was 5.6 bushels. Studies were conducted in cooperation with farmers in 16 soil conservation districts and on at least 8 major soil types.

**FIGURES.**—Approximately 500,000 acres of cropland are annually ruined by erosion for further immediate practical cultivation, estimates the Soil Conservation Service. This is the equivalent of 10,000 50-acre farms! But there is a lot more to the erosion-damage story; for instance, the fact that 385 million acres of the present cropland are hurt in varying degrees by erosion. Of the present cropland, 390 million acres are suitable for cultivation if protected by the right combination of conservation practices.



**FRONT COVER.**—From the air the farm of Rev. William H. Stauffer is as pleasing as on the ground. As Glenn K. Rule says in his article in this issue, here works a farmer who is "an all around conservationist." The farm is in Tuscarawas County, Ohio, and its story is well worth reading. The plane-riding photographer is Hermann Postlethwaite.

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Everett Bass, a cooperator with the North Fork of Red River Soil Conservation District in Oklahoma, established this fine Bermuda grass waterway which receives terrace runoff water from both sides. He uses the waterway for pasture.

By W. M. NIXON

**B**ERMUDA GRASS is a native of the Bengal region of India. It does not seem to be definitely known when and how it was introduced into the United States, but it was probably in the latter part of the eighteenth century.

Botanists call Bermuda grass *Cynodon dactylon*. But in one place or another it has been known as "wire grass", "reed grass", "dog's tooth grass", "salt grass", "scutch grass", "cane grass", "Bahamas grass", "Yankee grass" (a local name in Virginia, because of its supposed introduction by the northern army during the Civil War), and "devil grass."

Once considered strictly a pest, it has rapidly gained recognition by conservation farmers and Soil Conservation Service technicians as a dependable aid in the battle against soil erosion.

Soil conservation district cooperators throughout Arkansas, Louisiana, east and central Okla-

homa, and east and central Texas are using Bermuda extensively in their coordinated conservation program to tie down eroding soil, reduce runoff, and serve as a base pasture grass. It does all these jobs effectively.

There is practically no soil or water loss under a good sod of Bermuda. At the Red Plains Conservation Experiment Station, Guthrie, Okla., over a 15-year period, the water runoff was less than 1 percent, and the soil loss was only .016 ton per acre. Similar results have been recorded at experiment stations throughout the South and Southeast.

Bermuda is a highly palatable grass. It ranks high in protein, phosphoric acid, and calcium.

In many sections Bermuda, clovers, and lespedeza furnish almost year-around grazing. Fertilized and limed, such pastures often produce 300 to 500 pounds of beef per acre.

Bermuda alone will yield 7 to 9 months of grazing a year. It provides its greatest amount of green forage from May through October.

Soil conservation district cooperators are establishing Bermuda pastures on land which can-

Note.—The author is regional agronomy chief, Soil Conservation Service, Fort Worth, Tex.



not profitably be cultivated, and meadows on land formerly idle. Many of the pastures and meadows serve as waterways for the safe disposal of terrace runoff. Where adapted, Bermuda is the best grass for stabilizing individual terrace outlets, terrace outlet channels, and gullies.

Thousands of testimonials to the worth of Bermuda come from soil conservation district co-operators.

E. L. Thompson of Leona, Tex., for example, has found profit in the improvement of a 37-acre pasture which he superphosphated and seeded to Bermuda grass and white Dutch clover. With the

Bermuda established, the pasture gives year-around grazing for 32 head of livestock, although all the stock get some winter feed. Cattle grazing the improved 37 acres average 200 pounds more than Thompson's cattle on unimproved pastures. Cows on the improved pasture have a 100 percent calf record; calf crop for all the cows on the farm is 90 percent. The income from the extra calf crop in 1 year paid most of the cost of improving the pasture.

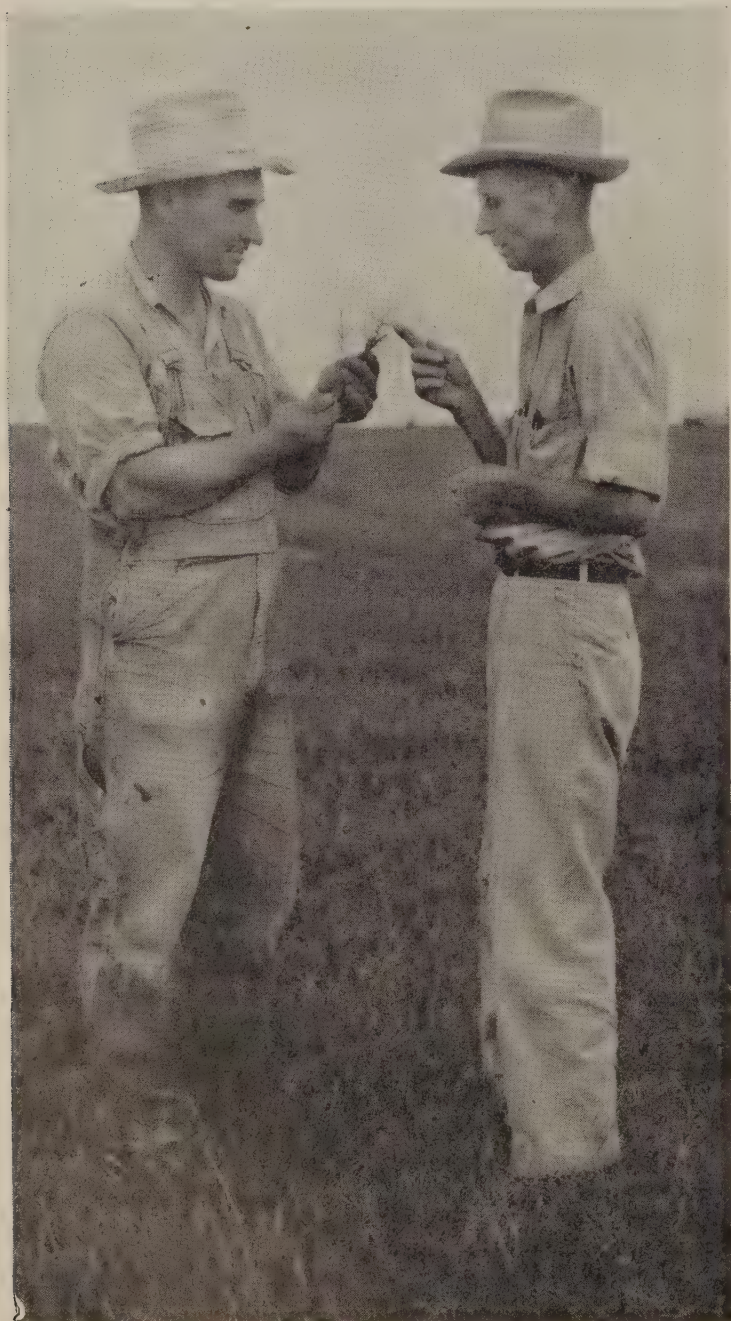
Six years ago 158 acres of Bob Gray's farm near Holland, Tex., constituted depleted row crop land covered with broom weeds and mesquite brush. Gray turned the 158 acres into pasture. Now a heavy stand of Bermuda grass carries a cow on 2 acres 9 months of the year. With the improved permanent pasture, plus supplemental pasture, Gray was able to increase his herd from 66 to 102 cows.

Bermuda is established by sodding, sprigging, or seeding. Sprigging is the setting out of relatively small pieces of dirt-free roots. Sodding is setting out chunks of sod and soil. Sprigging is cheaper.

On sandy soil, Bermuda sprigs can be harvested readily with a springtooth harrow and a side delivery rake. Sprigs or chunks of sod usually are planted on flat-broken land in 3-foot rows, spaced from 2 to 3 feet apart in the row. Bermuda can be established by this method any time moisture conditions are favorable; the most satisfactory time is early spring, while the grass is still dormant. Many soil conservation districts have developed machines with which to plant Bermuda grass.

While thousands of acres have been established to Bermuda by sprigging or sodding, our technicians believed seeding would be more rapid and economical if successful methods could be developed. Therefore, they encouraged many district cooperators to make trial seedings.

J. D. Bogard, a cooperator with the Gaines Creek Soil Conservation District, living near Indianola, Okla., followed the seeding recommendations of technicians and district supervisors in 1944. He comments, "In May and June of that year I planted 32 acres to Bermuda grass in 18-inch rows with a 2-row seeder. I used about  $\frac{3}{4}$  pound of seed per acre. The field was covered solid by August 15 and furnished grazing for 7 head of stock for 4 months. I had prepared a good



Almost pure stand of Bermuda (Brazos County, Tex.) on old cultivated field seeded to Bermuda in April 1946. Field was planted to vetch, which was turned under in March. Henry Schram, son of owner, and C. T. Pigg, SCS technician, examine seed heads.





Part of a 115-acre pasture developed from an old eroded field that had been cultivated. Bermuda grass is the base vegetation.



Last cultivated in 1942, this field is now a profitable pasture that produces forage, hay and seed. It was badly eroded and worn out by continuous row cropping when it was taken out of cultivation. Bermuda and Dallis grass form the basic vegetation. White Dutch, hop and Persian clover are overseeded. The field was treated with 500 pounds of phosphate, 100 pounds of potash, and 1 ton of lime per acre.

seed bed—that's necessary. That fall I bedded the grass to protect against winter killing. All of my grass came through the winter and gave me excellent pasture throughout last summer and fall.

The next spring after I uncovered my Bermuda with a disc and harrow, I seeded 500 pounds of Kobe lespedeza in it. In July and August the Bermuda and clover had made such a good growth



that I was able to graze 30 head of cows and calves on the 32 acres."

Seeding Bermuda grass has been successfully done by Louis Gullett of Aplin in Perry County Soil Conservation District. Charles Reeder, work unit conservationist in the Perry County Soil Conservation District, reports that Gullett was eager to establish Bermuda as a base grass for his pastures, but has been unable to do so because of the labor and expense.

When he heard other farmers were having good luck with a new method of establishing Bermuda grass with seed which had been worked out by SCS technicians, he decided to try it.

He prepared the seedbed by breaking, disking and harrowing and let the seedbed settle. Just before planting he harrowed the field to kill some of the tender annual weeds which had started. Rows were laid off 40 inches apart with a fertilizer distributor, at the same time 200 pounds per acre of 4-12-4 fertilizer were applied. In the same furrow on May 29 he planted hulled Bermuda grass seed at the rate of 1 pound per acre. He used a special attachment he borrowed from the Perry County Soil Conservation District so he could plant as little as a pound per acre of the tiny seed. A good stand of Bermuda grass with 4- to 6-foot runners was on the ground before the growing season was over. This 3-acre plot was grazed continuously to keep down competition from other vegetation.

Gullett learned that a principal cause of failure in seeding Bermuda grass is that the 1-year-old plants freeze out the first winter. So he covered his Bermuda grass with one plow furrow to each row. With the threat of freezing past, he will disk and harrow the land to bring the runners nearer the surface.

Successful results have been obtained from seeding Bermuda grass by row-planting and broadcasting. Bermuda grass should be planted in the spring on a clean firm seedbed, with the seed covered lightly by firming. It is important that the seed be planted early to obtain a stand and good growth before summer drought begins. The seed can be planted in rows with a regular one-row or two-row planter with small grass seed attachments, a grain drill with grass seed attachment, a grass seed drill equipped to plant fine seed, or broadcast with a cyclone hand seeder or wheelbarrow seeder.

From 1½ to 11½ pounds of good quality seed per acre seems to be sufficient when planted in rows; from 11½ to 3 pounds per acre when broadcast. The seeding rate for terrace outlet waterways should be increased 50 percent. Hulled seed should be used. Hulled seed gives a stand in 7 to 12 days while unhulled seed takes 3 to 6 weeks. When Bermuda is planted on eroded and depleted soil, a complete fertilizer such as 5-10-5 or 6-8-4 should be applied. Do not use phosphate alone. Turning a legume green manure crop into the soil before seeding will aid in providing needed nitrogen and organic matter.

Lespedeza and clovers should not be overseeded on seeded Bermuda grass until the second growing season.

These successful seeding methods, together with improved harvesting and planting equipment for use in sprigging or sodding, are speeding up the vegetating of thousands of acres of eroded land to Bermuda grass.

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## STABILIZING THE KALEVA "SAHARA"

By DANIEL Z. BALOG

THE FARMERS of Manistee County had been wondering for years why something had not been done to stabilize a sand-blow area 1½ miles east of Kaleva, Mich. It was an eyesore to farmers, a headache to real estate agents trying to sell land, and a tough problem to the county highway department. More sand than snow was plowed off the highway in this area every winter.

When the Manistee County Soil Conservation District was organized in August 1945 the directors felt that one of their first jobs would be to stabilize this sand-blow area. Frank Wilson, executive vice-president and cashier of the Kaleva State Bank, assisted the district directors and the Soil Conservation Service in contacting the land owner, Richard Shimmel of Detroit. Shimmel signed an application for assistance with the district and gave the directors permission to do as they saw fit to control wind erosion on his land.

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Note.—The author is work unit conservationist, Manistee, Mich.





**Directors digging beach grass planting stock along the shores of Lake Michigan: Edward Swanson, Martin Urka, Ray Anderson, Forrest Chrestensen, Harry Taylor and Floyd Beers.**



**Directors planting beach grass in the plow furrows.**

The directors decided in their March meeting to obtain beach grass from a source along the shores of Lake Michigan and plant it in the dune area as one of the first steps in wind erosion control. On April 10, 1948, chairman Ray S. Anderson of Chief, treasurer Forrest Chrestensen of Onekama, directors Harry Taylor of Harlan, Floyd Beers of Marilla, Edward Swanson, Jr. of Bear Lake, work unit conservationist Daniel Z. Balog, and conservation aid Martin C. Urka met on the shores of Lake Michigan at 9 o'clock in the morning. They dug the beach grass from a plot of land belonging to the Onekama Township Board.

The beach grass planting stock and 1,000 red pine trees from the district line-out nursery were transported to the Kaleva dune area that forenoon. Ray Anderson plowed furrows 8 feet apart, run-

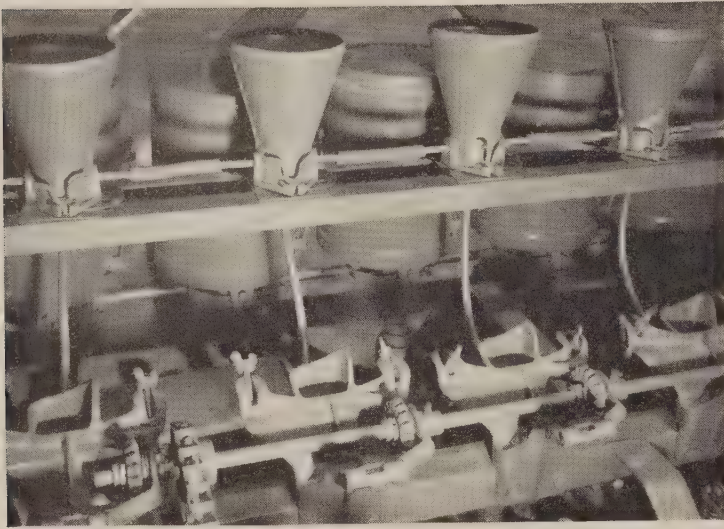
ning north and south on the west side of the blow-out area, with an 8-inch walking plow. The directors and Soil Conservation Service personnel planted the pine trees while Anderson plowed furrows 5 feet apart in the blow-out area selected for the beach grass line-out bed, using the 8-inch plow and his jeep as power. The beach grass was then planted in these furrows about 18 inches apart.

The directors expect to dig planting stock from this 1½-acre line-out bed to stabilize the rest of the area in 1949. They will also plant a 1-acre demonstration plot of black locust. Pine trees will be planted in this plot and the locust cut as soon as the pine trees are established. Another 1-acre blow-out area will be planted to African lovegrass and protected with brush until the love-

*(Continued on page 67)*



# GRASS SEED DRILL FILLS VARIED NEEDS



Close-up of cone-shaped boxes for planting fine clean seeds. The large boxes behind them are for fertilizer. Boxes for seeding trashy and fluffy seed fit on slots in foreground.

By W. M. NIXON

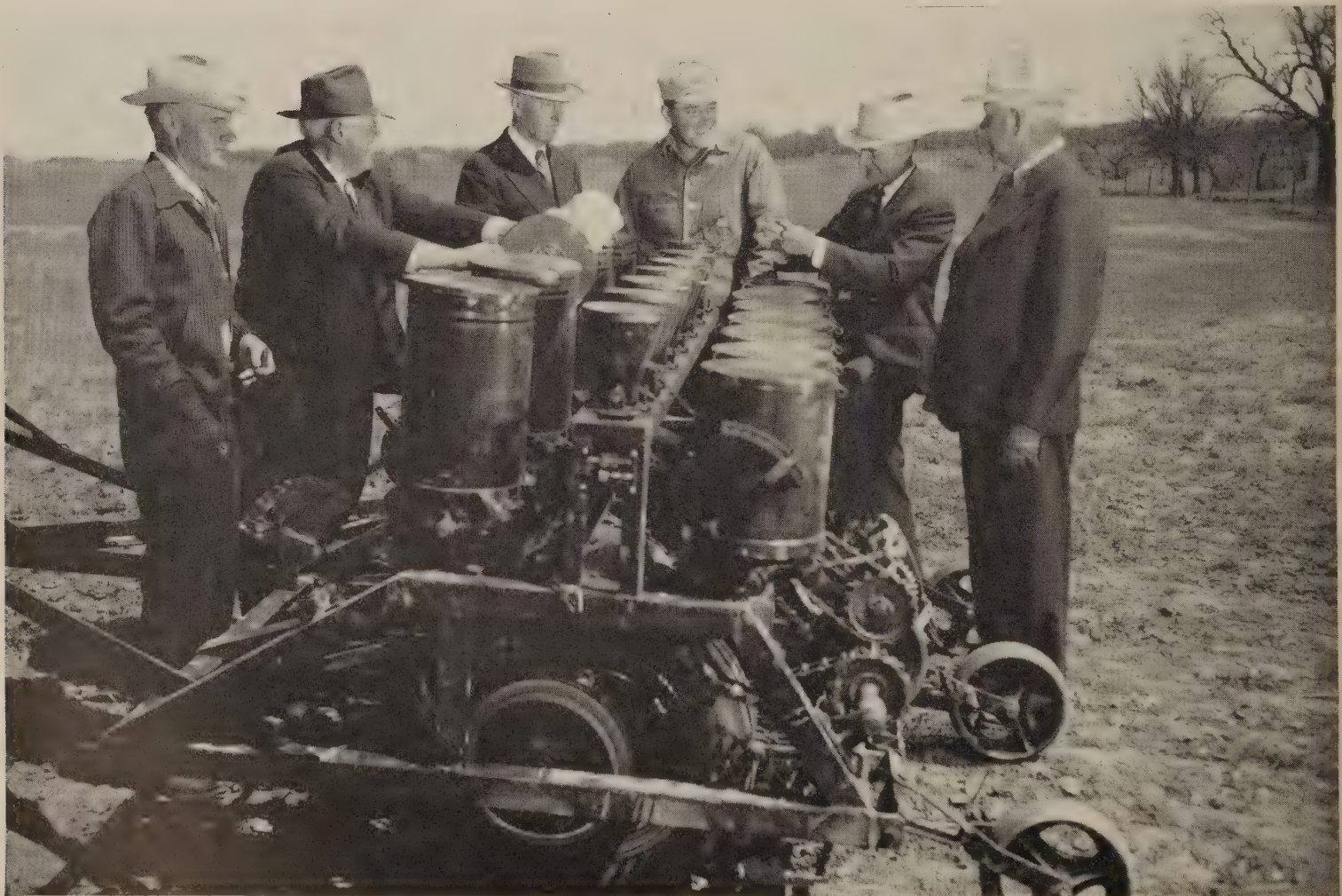
**M**ACHINES HAVE NOW been developed which are capable of planting both trashy seed and exceedingly minute seed in erosion-damaged areas of the Trinity and Middle Colorado River watersheds of Texas.

Revegetating work in the two watersheds during 1947 convinced Soil Conservation Service technicians that the 22 soil conservation districts working there did not have and were unable to build the kinds of drills required to handle all the native and imported grass seeds required to achieve both flood and erosion control.

Some useful plants, like Lehmann lovegrass, have more than 5,000,000 seeds to the pound. Those must be planted at rates of around  $\frac{1}{4}$  pound to the acre, and no commercial seeder or drill was available which could do the job uniformly. Those

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Note.—The author is chief, regional agronomy division, Soil Conservation Service, Fort Worth, Tex.



Supervisors of Upper West Fork Soil Conservation District in Trinity River watershed of Texas visit farmer to watch operation of seed drill. Left to right: Cecil Bullard, Joe E. Wilhite, L. T. Hunter, Charles McClure (farmer), Rollans Hill, and Grady Millican. Note that only 3 of the machine's 7 packer wheels are attached. That's because it is being used to plant seed in rows.



seeds are planted clean, but other seeds are planted fluffy and trashy just as they come out of the combine which harvests them. Little bluestem is an example. Equipment for planting it evenly, trash and all, at rates of around 8 to 15 pounds per acre was needed.

Machinery was needed which could not only plant small clean seed and trashy seed but also could put fertilizer down and pack the seedbed at the same time.

Paul Browning, SCS equipment engineer, set to work with these various needs in mind. He looked over a drill made by the agency at its Woodward, Okla. Nursery—a machine that did not include a fertilizer distributor. He then drew up a set of plans embodying all the requirements.

A Denison, Tex., firm bid in the contract for building 48 of the machines which Browning designed and began delivery several months ago.

The drills are mounted on rubber tires and weigh about 2,000 pounds each. Regular farm tractors can pull them. Each drill has 7 boxes for planting small clean seed. Those boxes are mounted on a frame. A small brush in each box turns rapidly, moving the small seed through a tiny hole in a stationary plate. The hole customarily is about  $\frac{1}{32}$  inch in diameter.

On the drill also are 7 boxes for planting trashy seed. The drills use either cotton or corn plates to plant native grasses.

Seven fertilizer hoppers on the drills are standard farm equipment that can be used for putting out fertilizer at planting time or for side dressing. Seven 40-pound packer wheels trail the disks. A gear assembly allows 10 different speeds, enough to fit practically any situation.

It is estimated that the drills probably planted more than 17,500 acres of native and introduced perennial grasses on cooperating farms in the Trinity and Middle Colorado River Soil Conservation Districts this year.



**RANGE SOCIETY.**—A new society for professional range men, pasture specialists, graziers, ranchers, and range users held its first annual meeting at Salt Lake City in January. The second annual meeting is to be at Denver in late January or early February 1949.

Purpose and objectives are: (1) to foster advancement in the science and art of grazing land management, (2) to promote and support the maximum sustained use of forage and soil resources of the nation's grazing lands, (3) to stimulate discussion and understanding of practical range and pasture problems, and provide a medium for the exchange of ideas and facts among members and allied workers, and (4) to encourage professional improvement of its members.

Membership in this new range society is open to all persons engaged in or interested in range or pasture management. These liberal membership requirements reflect the broad training needed in the field of range management. The nearly 600 members represent the livestock industry, colleges and universities, Federal, State, and other agencies.

This society is a result of the desire of workers in the field for an organization where they could exchange ideas, discuss and agree upon procedures and practices, and, in general, further the maintenance and improvement of grassland resources. They felt that the forage resources which cover over one-half the total land area of the United States need greater emphasis because of their importance as one of our basic natural resources.

The society plans the publication of a journal treating range and pasture problems. It is hoped that the first issue of this journal will be released during 1948.

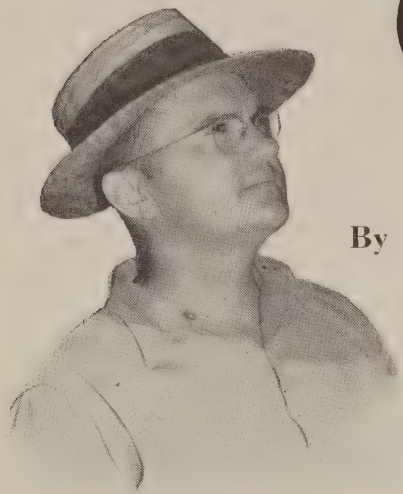
The present officers are: President, Joseph F. Pechanec, Portland, Oreg.; vice president, W. T. White, Portland, Oreg.; secretary-treasurer, Harold F. Heady, College Station, Tex.; council members, F. G. Renner, Washington, D. C.; George Stewart, Ogden, Utah; L. A. Stoddart, Logan, Utah; D. F. Costello, Fort Collins, Colo.; B. W. Allred, Fort Worth, Tex.; and Vernon A. Young, College Station, Tex.

**EROSION IS A THIEF.**—The reduction of the depth of topsoil by erosion from 13 or more inches to 1 to 2 inches reduced the corn yield from 93.4 bushels to 49.2 bushels at Fowler, Ind., states R. E. Uhland, SCS research, Washington, D. C. This represents a loss of 44.2 bushels in production capacity, or a 47.3 percent reduction. Similar results were obtained at Bethany, Mo., and at other locations. O. R. Neal, SCS research, New Brunswick, N. J., found that surface soil exceeding 6 inches in depth produced 184 bushels of potatoes per acre as compared with a yield of 135 bushels per acre for those portions of the same fields averaging less than 6 inches of topsoil.

**BURNING REDUCES YIELD.**—Burning pasture decreased yield of hay more than half in 8 years, states Harry M. Elwell, SCS research, Guthrie, Okla. An area protected from grazing and fire made 2,886 pounds of hay per acre as compared with a yield of 1,366 pounds for land protected from grazing but burned annually. Another area protected from fire for 11 years produced 3,907 pounds of hay per acre compared with a yield of 1,858 pounds for an adjacent plot which was burned only twice during the 11 years. A burned wooded area lost 12 and 31 times more soil and water, respectively, than adjacent, unburned areas.



# AN ALL-AROUND *Conservationist*



By GLENN K. RULE

**A**LL-AROUND CONSERVATIONISTS are hard to find, but the Rev. William H. Stauffer, a Menonite preacher and a successful farmer of Sugar Creek, Ohio, comes as near filling such a role as any man I know.

I had heard about his success in rehabilitating three formerly abandoned hill farms in Tuscarawas County. So I went there in late May and found his meadows knee high and almost ready to cut, but I also found the churchman shoulder deep in community affairs. "Right now," he said, "we are busy trying to get a cooperative canning unit established so we can can chicken, fruit, vegetables, and so on. You see, we need something here to give employment to some of our young folks so they won't need to go off to a factory to work."

The day before he had been in Columbus, attending a meeting of leaders who were discussing pending farm legislation in Washington. On the following Sunday he would discharge his usual responsibilities at the church, in addition to conducting a funeral service. When you consider that Mr. Stauffer is a member of the Board of Supervisors of the Tuscarawas Soil Conservation District, that he is on the Ohio Farmers' Institute speaking staff, and that he makes rather frequent and long trips into the western states in the interest of his church, you can rightly conclude that he is a busy man.

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Note.—The author is executive assistant to the chief, Soil Conservation Service, Washington, D. C.

Herbert Marshall, the district conservationist, drove me over to Sugar Creek where we met Curtiss O. Steele, the local farm planner, the Rev. W. Stauffer and his son, Bruce. We paused under some towering oaks near the roadside. A few of these giants had been cut and sold for lumber, but I noticed several butt logs still remaining on the ground. "These logs," said Mr. Stauffer, "may have an occasional nail and I have been unable until recently to get any sawyer to take a chance on cutting them into lumber. I have located a man who will take that chance and saw them just before he is ready to have his saws sharpened."

On leaving the small oak grove, we went by one of the two farm ponds on our way up one of many hills. On the way up the first hill, the lower part of which is now in pasture, Mr. Stauffer began to unfold his story of the rejuvenation of the land. He interrupted himself occasionally to ask Herb if the pasture shouldn't be clipped again or, "Isn't this grass about ready to cut for hay? You see I'm just itching to cut this grass myself."

Apart from such incidental remarks, Mr. Stauffer held to the main theme of land restoration. "My imagination," he said, "was caught by the idea of taking a piece of land worn out by man, and attempting to put it back into the productive condition in which it was when God first set man over it. Incidentally, the purchasing of a piece of land which no one else wanted also fitted my pocket-book. It seemed that Providence was with me because, within 3 years, three adjacent farms became available. A doctor friend and I embarked on a great adventure.

"We bought the first farm in the fall of 1940. No one wanted it, so we bought it for \$2,400. Immediately, by selective cutting, we obtained white oak timber which sold for \$1,400. Thus for \$1,000 we had obtained a comparatively new four-room house, an old 35 by 70 log barn, about 30 acres of land suitable for tractor farming, and 90 acres of hilly woodland and pasture.



It was decided to organize "The Four-District Soil Conservation Watershed." Activities of all agencies are to be harnessed together through a committee composed of one commissioner appointed by the governing body of each soil conservation district. As advisory members there is one representative of each County Extension Program Planning Committee on Land Use and Soil Conservation, the county extension director from each of the four districts, the district extension supervisor, the district conservationists of the Soil Conservation Service in the watershed, and a representative of the State Conservation Commission. The watershed committee serves in an advisory and coordinating capacity and represents all four soil conservation districts in working relations with State and Federal agencies, but does not supersede the authority of the individual soil conservation districts as provided by law.

The committee meets quarterly on designated dates or oftener on call by the chairman. Their functions and duties are to develop and keep current a watershed program and work plan, to request necessary assistance from cooperating State and Federal agencies, to prepare a yearly schedule of operations that is coordinated with county extension programs and district work plans, to review progress and see that the programs and work plans are being carried out, to keep the respective district governing bodies informed regarding developments in the watershed, to make recommendations on policy, and to prepare an annual written report.

A memorandum of understanding has been executed between the Iowa State Conservation Commission, the Iowa Agricultural Extension Service, the Soil Conservation Service, and the Four-District Soil Conservation Watershed. The Four-District Watershed Committee agrees to carry out the functions and duties assigned under the program and work plan, and to make office space available to State personnel working in the watershed. The Iowa Extension Service agrees to employ a full-time worker for the four counties, to be known as district extension director (soil conservation). He will be administratively responsible to the Director of Extension. The State Conservation Commission will pay all travel expenses of the district extension director (soil conservation), supply materials, postage, etc. needed for office and incidental purposes, and supply funds for hiring a conservation aid if he is needed.



**Watershed committee studies problems on farm adjoining State park on north. Only infertile, rocky subsoil remains. Complete crop failure resulted in 1947. Notwithstanding high prices, field is idle.**

The Soil Conservation Service agrees to provide office space, desk and other office accommodations in one of the district offices, equipment such as hand levels, the services of available technicians and technical direction of any conservation aids hired by the Conservation Commission.

The watershed of Forestville Lake includes about 74,500 acres and 580 farms in addition to the State Park of 1,411 acres. The major physical problems occurring in the watershed include improper use of land, serious soil erosion on upland farms, subsurface drainage on extensive areas, stream-bank erosion and channel scouring, siltation and flooding. Efforts of farmers to solve their own problems have been handicapped by lack of facilities for carrying on educational and demonstrational work on soil-conservation methods and practices.

Objectives of the Four-District Watershed, as stated in program and work plan, are to supplement and intensify the soil-conservation activities of the four soil conservation districts in a clearly defined watershed where critical problems exist. By so doing it is believed that farmers will benefit by preserving their lands, improving its productivity, and increasing its net income. Erosion, flood and siltation damage along public roads can be reduced at a saving of public funds. Public recreational opportunities in Backbone State Park can be improved and preserved.

To assist toward these objectives the educational program includes activities to acquaint farmers and townspeople with the seriousness of the erosion and fertility problems, and with the methods and practices that should be carried out. The district extension director (soil conservation) will advise farmers on approved conservation practices



relating to land use, soil treatment, crop systems, pasture and woodland management; conduct demonstrations in contouring, strip cropping, terracing, grass waterways and other conservation practices; hold educational meetings with small groups of farmers on a community, school district or watershed basis; assist with meetings of civic organizations, business groups, schools, etc.; assist in organizing groups of farmers for farm planning activities.

Farm conservation planning will be carried out by the several districts, working through groups of farmers insofar as possible, and utilizing the services of Soil Conservation Service technicians. The district commissioners may give priority to groups within the watershed. Technical assistance will be limited to farms having a complete conservation plan or to land owned or controlled by the State.

The Watershed Committee and the districts will give technical consultation to the State Conservation Commission or any other group or individual considering the purchase of land as a means of converting it to its best use so as to prevent further erosion damage. After the land has been purchased the districts may provide technical assistance in planning its development and use. Definite plans for maintenance will be set up in the annual schedule of work.

*The Four-District Watershed Committee provides a practical example of how to focus the resources of all agencies on a coordinated plan of action in a watershed that includes more than one soil conservation district. In many States districts are organized on a county basis even though many of the conservation problems can best be solved on a watershed basis. The people of Iowa are rapidly demonstrating that organization on a county basis need be no handicap to a coordinated program in a watershed. In fact, it may even turn out to have some advantages.*

**FARM INCOME INDEX.**—Farms with high land capability produce higher yields and net incomes than farms with low land capability, finds H. O. Anderson, SCS research, La Crosse, Wis. Farmers operating small farms with high land capability averaged \$1,331 greater earnings than farmers operating small farms with low land capability. The differences favoring high land capability for large farms averaged \$2,266 per farm. While land capability classifications are not intended to measure productivity differences, these records indicate that crop yields as well as net earnings were higher on farms with high land capability ratios than on farms with lower ratings. Insofar as erosion decreases yields, the differences in income are likely to become greater with the passing of time.

# PIONEERS, OH, PIONEERS!

By MARGARET SNYDER



First house built on the farm, and the first built by Cook. The calf is a registered Guernsey.

YOU'D HARDLY EXPECT to find pioneers in Prince Edward County now. At least not the kind that have chopped a farm out of untouched forest. But if you should drive 5½ miles west of Burkeville, Va., on Road 612, you would find a husband and wife who have done just that in the past 30-odd years. They are Mr. and Mrs. A. L. "Buddie" Cook.

They don't live in a log cabin. Since REA came into their neighborhood their house has all the modern conveniences that go with electricity—lights, water, a bathroom, an electric iron. If you stop for a visit, Mrs. Cook will show you her wonderful new washing machine, and tell you how she gets her washing and ironing all done by 2 o'clock Monday, instead of spending 2 days at the job. Some days she has so much time on her hands she doesn't know what to do with it.

It wasn't always that way. When they borrowed money to buy the place, during the first world war, it was solid woods, but that was all they could afford. Cook says they had to cut their way in, and he remembers how he and his wife put up the frame of their little house. They ceiled-in one room, where they put the cook stove, but the rest of it was just boarded over. At night they could see

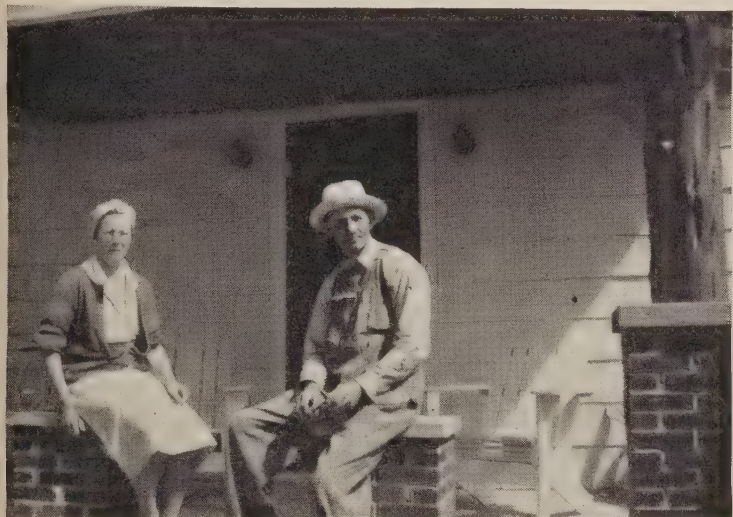
Note.—The author is with the Extension Division, University of Virginia, Charlottesville, Va.





**A. L. Cook and son, Calvin, cutting red clover hay which is grown in a 3-year rotation with corn and small grain.**

the moonlight through the cracks, and many a time the snow blew in. "But we toughed it out," Cook says.



**Mr. and Mrs A. L. Cook.**

The first thing was to get some land cleared. Every one of the 100 acres was covered with hardwood—big oaks and other valuable timber that they gave away or burned. One old man who lived in the neighborhood all his 97 years said the place had been big woods when he was a boy, and that his granddaddy said nobody'd ever put a plow in that soil. The Cooks made a tobacco bed the first thing. It was a lot of work, but it made them about all the money they had. They raised vegetables to live on. They had to rent some corn land in the beginning, but it was poor and washed out so badly they hardly made a crop. They couldn't mow any hay until they could get stumps out of a field, so they had to feed their one horse and one cow on corn stover.

The children came along in those years, too. Four of them were girls, so they couldn't do much

outside work. "But they helped in every way a woman could," Cook declares. He's mighty proud of his girls, and of the son who was their fourth child.

The family made out the best they could, but in 1929 they had sickness that cost them an awful lot, and a hailstorm that pretty near cleaned them out. The bank was mighty good to them through the drought and the depression of the next couple of years, and in 1933 the crop cleared them of debt. The next year they got a car, and in '36 and '37 they were getting on pretty well.

But then Cook got dissatisfied with his farming. He'd set up a rotation the best way he could, but he saw his land washing away faster than he could make it. "I got disgusted," he remembers. "I'd done the best I could put forth but it wasn't enough. It cost me too much to clean up that land, to see it go down the creek."

About that time a CCC camp was set up in the neighborhood to work at stopping soil erosion. Some of the folks around got farm plans from the camp workers. "But those CCC youngsters kind of fretted me," Mr. Cook says. "I looked over some of the other farms and I didn't like the set-up. Besides, they talked too fast and knew too much."

Then in 1940, the farmers in Prince Edward and three of the neighboring counties got together and organized the Piedmont Soil Conservation District. They got Howell E. Lacy, of the Soil Conservation Service, to help them plan their farming the conservation way. "When Lacy came to see me about my farm," Cook says, "he was so slow explaining that I thought we'd struck up something, and I accepted the plan."

Afterwards, he got to thinking about all the fertilizer the plan called for—300 pounds for every acre each year—and he worried about where he'd get the money for it. He sent word to Lacy to come out and see him again; the Cooks had had a hard time getting out of debt and they didn't want to get back in again.

He was grading tobacco when Lacy came to talk to him about it, and the two men worked together at that job for about 3 hours, talking the plan all over again. Finally Cook decided to go ahead with it, and they agreed on a time for Lacy to lay out the first terraces. When they were marked out, the Cooks went to work and built them, and Lacy checked them afterwards.

They terraced 10 acres that first year, and kept



working at it until now the Cook farm has 32 acres in terraces. They made some other changes too, but the plan ran 5 years and it was fixed so the Cooks could change things a little at a time, the way it was easy for them.

When the 5 years were up Mr. and Mrs. Cook decided they wanted to go on working with the conservation folks. "We'd both worked hard all the time," Cook says, "but maybe we didn't know how to put things together. Our agricultural leaders are wonderful men. You can't make a mistake if you stick to 'em. The way they help us is a wonderful opportunity—the county agent, the conservation folks, and the AAA. They know so much, and when you put that together with the little we know you get somewhere."

The Cooks say the best thing about conservation farming is the way it has stopped the soil from washing. Take that gully that was so big they lost their boy in it one day.

Mrs. Cook laughs a little about that now. The boy was about half grown then, and he was out one day on a horse minding the cows. All of a sudden they didn't see him anywhere. Cook went out to look for him and found the boy had ridden down in the gully to keep out of the wind. "It was so big he didn't show at all, even sitting on a horse."

A little later the CCC boys were going to do some fill-ins on that gully but they were called off for defense work, so Cook and his son did it themselves with a pile of stones and an old horse and a plow. Now that gully is all grassed over so smooth you can drive any piece of machinery over it. Mrs. Cook says there used to be fine blackberries in that gully, "And they were real handy to the house. But I guess the hay on the meadow strip is worth more than the blackberries. It makes more milk in the can. That's one way to turn black into white!"

The place has improved in a lot of other ways, too. The Cooks still raise 5 acres of tobacco each year, but its yield has stepped up more than 25 percent over what it was before they started farming the conservation way. They run a 3-year rotation in 9-acre shifts of corn, small grain, and hay, besides 2 acres of alfalfa and 17 acres of permanent pasture. Now the Cooks are getting double the old yield in corn and grain, and last year they had hay to sell. This spring they are seeding 3 more acres of alfalfa. They keep a dozen cows and calves now and sell cooler-grade milk.

Cook says it's interesting and profitable. The cows made 50 percent over cost last year, and so do the 80 to 125 chickens raised each year.

They put on 400 pounds of fertilizer now, and Cook says, "If I didn't have the money I'd borrow it *for 2 years* to put that fertilizer under my crops. It makes the crops that much better."

He keeps close records. "It looks to me like it's useless to continue doing a thing unless it's paying," he says. "It doesn't take so much time. You should put down everything you spend or take in every day, but never let it go over a week. I make up a monthly report from the daily notebook, and then the Christmas nights I put it all in a yearly book. Doing business without books is blind. The books help with the income tax returns, too."

The farm has done so well the last few years that now they've fixed the house till it's as comfortable and pretty a home as you'll find anywhere. "We just forgot about the house to give the children their education," Mrs. Cook says.

The first four children finished high school, and now the youngest girl is attending Farmville High School. Two of the girls went to business college afterwards, and one went to Farmville State Teachers College, but the boy never wanted to go any farther than high school. He did so well with his 4-H corn and livestock projects that he had 10 days at Blacksburg one summer. They're real pleased that he wants to stay on the farm with them.

Three of the girls married soldiers and now Mrs. L. M. Jewett lives in Maine, Mrs. J. V. Romeo lives in California, and Mrs. D. T. Glenn lives in Farmville, Va. Mr. and Mrs. Cook went to visit Mrs. Jewett in Maine last spring and Cook says, "We saw some sights in that country that I never thought was in the world."

They went right off the bat when the notion struck them one morning when spring was just opening. Cook had never been outside of Virginia, except a little way in North Carolina, and Mrs. Cook had never gone farther than Washington. They followed the trail along the Kennebec River clear up into Canada, and saw logs coming down the river "just like those pictures we used to see in the geography books in third and fourth grades," Mrs. Cook says. They saw the White Mountains, and Boston, and the Belgrade Lakes beyond Augusta, Maine, and a powerful dam that makes electricity for New York City.



They were gone 7 days, and the night they got back it rained—the first rain they'd seen the whole time. "Next day we had a season," Mr. Cook says, "and we planted tobacco. But we had plenty to think about while we planted, and to tell the boy and girl who stayed at home to tend to the place."

The Cooks think maybe this conservation farming is a new kind of pioneering, the kind a family can do even on land that's been used a long time.

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## KALEVA "SAHARA"

*(Continued from page 55)*

grass gets a good start. Shimmel is cooperating with the Manistee County Soil Conservation District by planting the area to the south and west of the blow-out area to a mixed planting of Scotch and red pine trees.

The district directors have the owner's permission to erect a permanent sign advertising their wind erosion control work with the Manistee County Soil Conservation District and the Soil Conservation Service.

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## RESEARCH POINTERS

Prepared by J. H. Stallings

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**ORCHARD CULTIVATION.**—A type of cultivation which results in "stubble mulch" by leaving cover crop residues on the soil surface is one of the most effective ways of utilizing such residues without sacrificing their protective and soil-building values, believes John T. Bregger, SCS research, Clemson College, S. C. On peach sites where the soil and tree rooting are deep enough, continuous cover crops are occasionally used without any cultivation. Significant reductions are being made in both the frequency and duration of cultivation without decreasing tree growth or yields.

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**FRUIT TREES NEED HELP.**—Clean cultivation of rolling orchard land has resulted in partial or total destruction of many acres of good fruit land, finds John T. Bregger, SCS research, Clemson College, S. C. Despite the wide acceptance of the traditional cultivation system of peach orchards, evidence has been piling up which indicates that certain conservation practices, including continuous vegetative and mulch covers, modified sods, or simply a short annual period of cultivation are both practical and successful.

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**CULVERT OUTLETS.**—Erosion to a depth of as great as 8 feet may be expected for a culvert 3 feet square, while depth of erosion for other culvert sizes may be expected to vary in proportion to the culvert size for similar discharges, states Fred W. Blaisdell, SCS research, Minneapolis, Minn. The use of a sill at the end of the apron reduces the total volume of erosion and the use of a primer reduces the velocities on the apron, the depth of erosion at the cut-off wall, and the total volume of erosion.



**CONTOURED CORN.**—Sweet corn produced 2,999 more ears and cabbage 1.82 tons more per acre when cultivated on the contour than when cultivated with the slope, states E. A. Carleton, SCS research, Geneva, N. Y. The corn on contour matured much more uniformly than corn in rows paralleling the slope and had fewer small ears.

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**CAN'T IRRIGATE HERE!**—Efficient use of irrigation water is almost impossible on steep fields which are irrigated in furrows directed down the steepest part of the slope, reports Stephen J. Mech, SCS research, Prosser, Wash. Production of row crops on such slopes, even with careful irrigation, very short length of run, and minimum size of stream, results in very poor moisture distribution over the field and the removal of at least 1 inch of soil in every 12 years.

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**HANDLING STUBBLE MULCH.**—Decay alters the degree of protection to the soil by changing the amount and properties of a straw mulch, finds T. M. McCalla, SCS research, Lincoln, Nebr. Decay changes tough, new straw to a brittle condition. Too much brittleness causes the straw to break into small pieces which work into the soil and decay more rapidly. From the standpoint of maintenance of straw mulch for soil and moisture conservation, it is obvious that plant mulch deterioration is inevitable. By proper management of the straw mulch, so that there will be little mixing with the soil and so as to avoid mechanical fragmentation by tillage machinery as much as possible, decomposition can be delayed long enough to permit protection of the soil during the interval between crops.

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**MEADOWS WITHOUT PLOWING.**—Alfalfa-grass meadows can be established successfully without plowing on eroded, unproductive broomsedge and poverty grass land, discovers H. L. Borst, SCS research, Zanesville, Ohio. Lime, fertilize, and disk the land before seeding. The "trash mulch" produced by disking protects the land from the destructive forces of rainfall and erosion. It promotes infiltration, decreases and controls runoff, eliminates erosion and conserves moisture by decreasing surface evaporation. This protection cannot be provided by plowing, but it can easily be by disking the soil in the proper way while preparing the seedbed for the new seeding. Seeding the meadow directly, without the conventional small grain, eliminates competition by the so-called nurse crop. Meadows thus established have produced an average of 2.5 tons of alfalfa-grass hay per acre the year after seeding. The yields obtained are almost 1 ton greater than those from the average hay field in the State.

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**OUTLET STRUCTURES.**—Depth of erosion in the channel bed is not reduced but the location of the scour is moved further downstream when the wingwall is placed as an extension of the basin sidewall, finds Albert N. Huff, SCS research, Minneapolis, Minn. The end sill is effective in keeping erosion away from the end of the basin by deflecting the flow of water upward and away from the



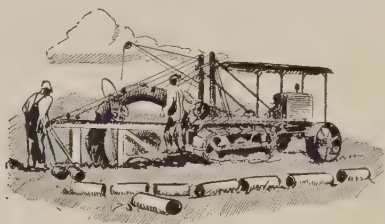
stream bottom. A vertical baffle of a square cross-section with dimensions equal to one-tenth the width of the spillway at the bulkhead, located one-third the length of the outlet from the downstream end, distributes the flow in the outlet so that it leaves the basin without spreading the outside walls.

**VEGETAL-LINED CHANNELS.**—Permissible velocities for bare earth channels are probably not more than 1 foot per second, declare W. O. Ree and V. J. Palmer, SCS research, Stillwater, Okla. The retardance coefficients for grass-lined channels are much higher than those for bare earth channels; consequently, the former will support higher velocities than the latter.

**DRAINAGE UPS YIELD.**—Corn yields were increased from 19.5 bushels to 43.7 bushels per acre by drainage, states R. E. Uhland, SCS research, Washington, D. C. Wheat yields were increased from 11.2 bushels to 22.7 bushels per acre and hay from 0.84 ton to 2.20 tons. These findings are from 74 farms in 3 counties in Maryland.

**FORAGE COVER IN WATERWAYS.**—There appears to be no direct connection between the amount of forage cover and soil loss in waterways, reports M. B. Cox, SCS research, Guthrie, Okla. The type of grass, the slope of channel, and possibly other factors have more effect upon the rate of soil loss than does a slight change in the amount of cover.

## SOUTHEAST



**DRAINAGE CORPORATION.**—Twenty district cooperators of Green and Pitt Counties, N. C., decided tile drainage work wasn't being applied fast enough in their area. They formed a corporation, subscribed \$10,000 in stock, and bought a trenching machine and trailer. They contracted with two men, trained in tile drainage by Soil Conservation Service technicians, to operate the equipment.

W. C. Eagles, work unit conservationist, encouraged the project because the Government-owned trencher was not able to do all the work the farmers were ready to do.

During the first year of operation, 80,000 linear feet of drains have been completed, improving more than 200 acres on stockholders' farms. The farmers intend to do custom work for others when ditching is completed on their own farms. SCS workers assigned to the Coastal Plain Soil Conservation District inspect and approve the work of the corporation employees who plan and stake the drainage system.

**NEGROES FORM CLUB.**—Robert E. Lee, a Negro farmer in the Edisto Soil Conservation District in South Carolina, applied to the district in 1945 for a conservation plan. There was only one Negro cooperator in that section at that time. A plan was developed with Lee for his farm and all practices have since been applied.

This farmer and the Vo-Ag teacher in his community organized the Trenton Soil Conservation Community Club, obtained 28 applications for farm plans, and have held meetings for interested farmers every month since then. Twenty plans have been completed and all work is progressing satisfactorily. Lee now builds all terraces for farmers in that community and applies to the work unit office for assistance other farmers may need.

**DISTRICT PLANS 110 FHA FARMS.**—The Farmers Home Administration established a special fund to pay for labor and materials needed by 110 of their clients to apply practices planned with the Wiregrass Soil Conservation District in Alabama. Emphasis was placed on planting pine seedlings, kudzu, crotalaria, and permanent pastures.

Soil Conservation Service workers interested the FHA supervisor in Coffee County in giving this assistance by showing him the need for soil conservation. Result: 110 farms planned; more than 1,000,000 pines and 100,000 kudzu plants set out; and many crotalaria and permanent pasture seedlings made.

**STATE FORESTER AIDS DISTRICT WORK.**—The South Carolina Commission of Forestry has been especially active in helping soil conservation district cooperators with the forestry phase of their district programs. Calhoun County District reports aid in getting 225,000 pine seedlings planted with good results on 42 district cooperators' farms. These farmers also established 20 miles of firebreaks, using tractors and plows furnished by the Commission of Forestry at low cost. Help of SCS technicians was requested to assure location of firebreaks where planned in the complete program for each farm.

The Orangeburg District reports 500,000 tree seedlings were received from the Commission of Forestry early in 1948 for plantings on 123 district farms. The Commission was especially cooperative in grouping tree orders going to district cooperators. The Commission also advised the district where to get planting dibbles. The supervisors bought three dozen dibbles, which were made available to cooperators at cost.

**DISTRICT PLANS.**—Commissioners of the Carroll County Soil Conservation District in Mississippi requested the local Production and Marketing Administration office to assist in getting farmers to apply for district plans and to supply the work unit conservationist with such farmers' PMA quotas. Seventy-five applications have been made under this arrangement during the past year. Each cooperator has already applied one or more of the planned practices.

**LUPINE PRODUCTION.**—The SCS work unit conservationist at Baxley, Ga., took the administrative assistant of the Production and Marketing Administration in Appling County to see the only field of blue lupine in the county. They talked with the owner of the 12-acre planting and agreed to work together to get blue lupine used more extensively.

The PMA clerk interested local seed dealers in supplying lupine seed through the purchase order plan. By using a book of photographs furnished by the SCS, he convinced many farmers who visited his office of the value of this soil-building crop. Leading farmers were visited by SCS and PMA workers.

A combine owner was induced to plant 100 acres to blue lupine and harvest the seed. As a result, 30,000 pounds of seed were planted the following fall and 250,000 pounds during each of the past two years. Three combines are now harvesting seed in the county and farmers are getting good results. Nearly every farmer in the county knows of the use of this winter legume in conservation farming.



**MINISTERS AID DISTRICT WORK.**—Supervisors of the LaRue Soil Conservation District in Kentucky invited all the ministers in the one-county district to a dinner meeting recently. The program included a motion picture on districts, an inspirational talk by an out-of-county minister who is an ardent supporter of soil conservation, and a request from the supervisors for the ministers' help.

Each minister present made brief comments, pledging his support and help in the soil conservation work. Since then, they have preached at least one sermon each on man's stewardship of the soil. While talking with farmers individually, they have encouraged them to apply conservation measures on their land.

As a result, reports C. A. McElroy, work unit conservationist, community interest has been awakened and soil conservation practices are being applied at a faster rate. Several hard-to-reach farmers have become interested and have asked that SCS technicians help them develop programs for their farms.

## UPPER MISSISSIPPI



**District commissioners at picnic.** Top: Ben D. Lee, J. P. Burns, Kenneth Wagner, Ed Kinsey, J. D. Misbach and R. G. Owen. Middle: Glen Sorden, S. T. Yates, C. T. Anderson, Homer Vincent, Joe Knotek and Howard Anderson. Bottom: H. Howard Oak, district conservationist; Frank H. Mendell, state conservationist.

**FOUR DISTRICTS GET TOGETHER.**—Once every 3 months there is an all-day meeting of the district commissioners of the Iowa, Johnson, Washington, and Keokuk Soil Conservation Districts in Iowa. In addition to the three commissioners from each of the four districts, the county extension directors, farm planners, and the district conservationist usually attend.

The idea originated 2 years ago. Enough interest resulted from the first meeting to keep the get-togethers going regularly in Work Group 18 ever since. The commissioners alternate as hosts.

The chairman of the home group usually is master of ceremonies. A program sheet prepared by the host district is given to everyone present. The meetings usually begin at 10 a. m. so the commissioners from a distance have ample time to make the drive. Sessions usually close around 3 in the afternoon.

A special attraction is lunch. A turkey dinner in the Washington District (turkey county of the world) or a home-cooked Dutch dinner in the Amana Colonies is something to look forward to with pleasure.

Chatty contacts and the sharing of problems often lead to helpful suggestions. Many a stumbling block is overcome. Some of the commissioners have been requested by commissioners in another district to assist in carrying

out programs, county meetings, and other events. On one occasion, the commissioners pooled their ideas on the holding of contour schools and, when a suitable plan was developed, all four districts followed the same pattern. By knowing each other and by taking an interest in other counties' problems, the commissioners take more interest in State meetings of commissioners. Cooperation with other agricultural leaders is stressed, and occasionally AAA chairmen and FHA supervisors are invited to attend meetings as guests of the commissioners.

The group welcomes talks by outside speakers. A talk on "Engineering As It Pertains to Soil Conservation" helped to clear up many of the commissioners' questions. Talks on "Grasses, Legumes, and Conservation Practices" and "Soil Classification and Its Relation to Farm Planning in the Work Group" by SCS men gave the commissioners information they could use in planning and administering the district program.

Since these men are vitally interested in agriculture in other parts of the world, they listened to a talk on Alaskan agriculture by one of the farm planners who had spent some time with the Fairbanks Experiment Station. A district farmer who had toured Europe was prevailed upon to tell his impressions of agriculture overseas.

A commissioner from one of the districts, who is also a GI instructor, described how he teaches soil conservation in his classes. A farm planner in the work group who has delved into the subject of nutrition and its relation to soil conservation gave the group his findings on that important subject. Since a well-rounded program is desired, the commissioners invited a Diocesan Coordinator of Rural Life from an Iowa college to tell them more about young people and rural life.

One of the most enjoyable meetings was a picnic in 1947 at a scenic spot on the Maplecrest River Ranch in the Keokuk District which wives and children attended. After a talk by the State conservationist and a short business meeting, the group toured the ranch to see the saddle horses and purebred cattle. Another picnic was held this year at Wellman, Iowa.

A highlight of the four district commissioners' activities was a four-district plowing contest and field day in September 1947. The event attracted 5,000 people to observe a contour-plowing contest and to learn more about terracing and waterway work. Funds for the field day were solicited by the commissioners from equipment dealers in the districts. *As a gesture of appreciation of the donations, the commissioners sent the contributors a year's subscription to SOIL CONSERVATION Magazine.*

An important part of every four-district program is the business meeting. The district conservationist usually has some information to pass out to the group. Reports may be given by commissioners who have attended State meetings or other events. A discussion of future field days, annual reports, and other district interests come before the group.

Commissioners in these districts have been invited by other districts to explain the organization of a four-district group and how it operates. Reports indicate that similar meetings are being held in some other states. It is true that the soil may not actually be saved at these meetings, but the persons concerned leave with more of an understanding of soil conservation and a renewed determination to do more to help save the Nation's soil and water resources.—H. HOWARD OAK and ETHEL P. WILLER.

**ALL HANDS TOOK PART.**—Directors of the Mason County Soil Conservation District with headquarters in Scottville, Mich., promoted a soil conservation week last June.

The effect soil conservation plays on our social, economical, and ethical life was stressed. Newspapers made a big play with articles, pictures, editorials, and special sections descriptive of soil conservation practices common in the district.



There was a 15-minute daily radio program throughout the week. Thirty-eight ministers in the county gave emphasis to soil conservation in sermons. Many rural and urban organizations used soil conservation as a theme at meetings held during this special week.

District directors were active in making talks, writing newspaper articles, and making radio appearances.

Floyd Wood, chairman of the district, named Tom Alway, member of the board, as chairman of a special action committee composed of Milo Colburn, Ervon Kistler, Ranold Thurow, other directors of the district.

Assisting directors in promotion and planning were Lindo J. Bartelli, work unit conservationist; Paul C. Smith, district conservationist; Harold J. Larsen, county agricultural agent; and Loyal Bagley, AAA chairman. A similar week will be held in 1949.

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## NORTHERN GREAT PLAINS

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**HIGH PAY FOR BETTER FARMING.**—Some 2,400 bushels of grain are the wages that Ralph Swope, a farmer near Redfield, S. Dak., has realized from a mile and a quarter of drainage ditch. Swope is a cooperater with the Tulare-Redfield Soil Conservation District. It has eliminated one of his worst nuisances, having to farm around potholes. Now he can farm right through them without a hitch.

The drainage ditch is part of the conservation plan that A. B. Gilbertson, SCS, helped work out and apply. It has reclaimed about 70 acres that normally would be too wet to farm in spring or where crops would be drowned out during the growing season. These potholes have been a bother for a long time.

"The year before we built the ditch," Swope says, "we had a dandy crop of oats that was nearly headed out. But along came a 3-inch rain to fill the potholes with a foot or more of water. The water couldn't soak into the heavy soil, and the oats died."

That fall, Swope built the drainage ditch and the next spring planted the field to corn. Another heavy rain fell, but the drainage ditch got rid of the excess water.

"I figure that I have taken 600 bushels of wheat or other grain from those low areas each year since the drainage ditch was built 4 years ago," Swope says.

Other measures for water control include the diversion of runoff water that flooded the farmyard from a neighboring field. A dike and ditch took care of that.

Along with the drainage and diversion structures, SCS technicians located the site for a stockwater dam so that it could help improve grazing management of Swope's pasture, helped him start a farmstead windbreak, and helped him establish an improved crop rotation.

**GOOD FROM THE TOP DOWN.**—Crop yields almost as good at the top of the slope as at the bottom, washouts stopped, and economy in equipment operation are among

the results of conservation farming during the last 8 years by Roy Norman, Osmond, Nebr.

Norman began conservation farming on his own hook in 1938, making use of information gained from newspapers and magazines. He developed grassed waterways, laid out his fields for contour farming, and began the use of grass and legumes in crop rotation.

"These things have held both soil and moisture on the slopes," Norman says. "This has virtually ended crop washouts, and yields at the top of the slopes are nearly as large as those at the bottom. Also, the power needs are less and there is less wear and tear on equipment."

Norman now is cooperating with the Pierce County Soil Conservation District, organized last spring. He and SCS technicians have worked out a more nearly complete farm conservation plan, which includes some changes in fields so that each part of the farm will be put to its best use.

He remarks that although he had made a good start on conservation farming, he realizes that there is more to it than establishing practices, and that is why he sought the aid of district technicians.

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**ADJUSTED WATER TABLE.**—Improvement of his irrigation system and drainage, as part of his farm conservation plan, not only has made irrigation easier but also has brought more acres into production, reports Marion E. Tippetts, Lovell, Wyo., cooperating with the Shoshone Soil Conservation District.

"Part of the new land brought into production consisted of barren spots, and part was brush-covered land that has been cleared and leveled," he says.

Tippetts started cooperation with the district 2 years ago. Miles B. Harston of the Soil Conservation Service helped him work out his conservation plan and supplied technical services.

Before he started, some of the land was salty because of a high water table, some was too high for satisfactory irrigation, and some spots were unproductive because of the condition of the soil.

Drains were installed on about 60 acres, the whole irrigated area was leveled and smoothed and gypsum was applied on 26 acres at the rate of 10 tons per acre. Most of the leveling was done with his regular farm equipment, heavy machinery being required to only a small extent. Clearing was done on about 12 acres.

"The drains lowered the water table so that the wet land produced fairly well the first year and will get better," Tippetts said. "Some of the barren spots have been made productive, and crop production was doubled on the land treated with gypsum. Leveling has resulted in better distribution of water, with less work and less water needed."

Tippetts isn't quite through with his conservation plan, however. He will improve existing drains and build new ones that are still needed. And there is still a little land suited for cropping that needs to be cleared and leveled. He is practicing an improved crop rotation and using fertilizer and conservation methods.

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**WATER WHERE NEEDED.**—Redant brothers for years pumped water from the Teton River to irrigate their farm about 10 miles west of Fort Benton, Mont. Then along came the Soil Conservation Service to help them bring 65 more acres under irrigation by finding a new location for their pump and designing a new water distribution system.

This happened in the spring of 1947, after they began cooperating with the Chouteau Soil Conservation District.

Redesign of the irrigation system in order to get better control over irrigation water and more uniform irrigation on all of the land is a major part of the job. Leveling of land has been just about completed and a system of border dikes is being installed.

The new system, the Redants report, has reduced the number of ditches needed, has just about eliminated the



need for shoveling, and has made irrigation easier and faster.

A conservation crop rotation that includes the use of grass and legumes is also part of the conservation plan.

**GULLY REFORMED.**—Transforming a wasteful, gnawing gully into a useful, grass-covered drainageway doesn't take so long if you go about it right. That is what J. F. Scraper, Beloit, Kans., found out when he started putting on his land the farm conservation plan developed with the help of Robert T. Schafer of the Soil Conservation Service.

"The gully that is now a grassed drainageway was large," says Scraper. "It had made about 5 acres completely waste and it was growing rapidly. And since it could not be crossed, it interfered with farm operations."

Further, he said, the adjoining land is rather steep sloped and had lost much of its productivity because of erosion.

Scraper, who farms with his son, began cooperating with the Mitchell County Soil Conservation District early last spring in order to get the aid of SCS technicians.

The gully was first bladed-in with heavy equipment and shaped so that it now has a broad floor and gently-sloped sides. In April brome grass was seeded. Weeds were mowed twice during the summer. In the fall western wheatgrass was seeded where the brome grass was thin.

"I established this grass cover in less time than I expected," Scraper comments. "And it effectively checked cutting by water that flowed through the drainageway. The appearance certainly is different from what it was a year ago."

Besides the drainageway, Scraper and his son built some of the terraces needed on the farm, put contour strip cropping into effect, built a farm pond, planted a farmstead windbreak, and started using a legume in the crop rotation.

Still needed are more terraces and grassed waterways, seeding of badly eroded and steep land to grass, putting fences on the contour, use of more alfalfa and sweet clover in the crop rotation, and management of crop residues to aid in the control of both wind and water erosion.

Scraper and his son built their terraces with a one-way plow.

**NO LONGER A SLOUGH.**—Because of his conservation plan, he has changed a 20-acre slough near the farmstead into a hay meadow that gets a controlled flood-irrigation each spring, says John A. Hanzal, Parshall, N. Dak., a cooperator with the Ft. Berthold Soil Conservation District.

Hanzal got a wonderful hay crop from the slough his first year on the farm. But melting snow filled it 4 or 5 feet deep the next year. It was kept filled the next 2 years, until drainage was provided.

"Besides preventing the use of some of the best land on the farm," Hanzal explained, "the slough was a nuisance because it was so close to the house. Ducks might have liked it, but so did mosquitoes."

Hanzal worked out his farm conservation plan with the help of H. Glenn Simms of the Soil Conservation Service. Technicians laid out a system of drainage with a small gate in the ditch so that water could be held back long enough to give the ground a good soaking and then drained off. Hanzal built the drainage ditch with district equipment.

"In 1946," he said, "I got a good hay crop from the slough once more. Then last year I got a dandy crop of flax. I intend for the slough to be a permanent hay meadow, however. It was plowed and cropped in preparation for seeding a better hay mixture than was there before."

Besides taking care of the slough, Hanzal's conservation plan includes strip cropping and crop residue management—that is, keeping the land covered with stubble the maximum length of the time. This, he says, has just about

completely stopped the soil blowing that often has damaged crops. Improved pasture management practices are also in effect.

The farmstead windbreak, planted before the slough filled, has done well except where it passed through the slough area. The trees were drowned out there, but now that the slough has been drained more trees will be planted.

## WESTERN GULF



Piles of juniper (cedar) and brush cabled from Rocking R Ranch in fall of 1947. With them is W. H. Bennett, SCS technician.

**TRIAL BY FIRE.**—G. W. Reese is conducting a series of trial brush-burnings and grass-seeding on his Rocking R Ranch near Morgan, Tex. Results will help him in the development of a good pasture management program for his ranch. In working out his plan he has the assistance of Soil Conservation Service technicians called in by the supervisors of the Bosque Soil Conservation District, of which Reese is a cooperator.

Reese had brush and cedar cabled from his ranch last fall. As he does not believe in indiscriminate burning, he left the uprooted trees and bushes on the ground in partly windrowed piles. He then laid out three 2-acre blocks on ordinary upland and shallow rocky pasture sites. One block on each site was burned last March 1 and one of the 2 acres in each block was seeded the next day with a mixture of little bluestem, yellow bluestem, slender grama, sideoats grama, weeping lovegrass, switchgrass, Manchurian milkvetch, and Hubam sweetclover. The unseeded acre in each block was left as a check plot. The same procedure was carried out on the second block a month later and on the third block 2 months later. It was planned to do no burning or seeding after hot, dry weather set in.

Reese hopes to ascertain: (1) Is it desirable to burn the larger piles of cabled material so that grass can grow and livestock can have access to it; (2) if burning of the large piles is desirable, when is the best time to burn them to prevent excessive losses of organic matter on the surface of the soil; (3) when will the least amount of good grasses already present be killed by the fires; (4) is it desirable to follow up by seeding a suitable mixture of desirable grasses and legumes; and (5) how well will the desirable grasses and legumes prevent or check the undesirable plants from coming in on the disturbed areas?

Cedar, grass, and other forage counts are being made to determine the effect of the cabling, burning, and seeding. The results will be made known to other ranchmen having like problems. Tours of the Reese ranch also will be made.—W. H. BENNETT





Close-up of old baler.

**OLD HAY BALER TELLS STORY.**—Drought and the over-use of grass are a hard combination on our western range. Just how fast good range can turn into barren waste was graphically brought to my attention when I stumbled on an antiquated hay baler standing like a ghost in a great expanse of naked land 40 miles northeast of Fabens, Tex., across the Hueco Mountains divide on Diablo Mesa.

The old baler, a model of the early 1920's, still contained two bales of hay. A protective hood and the dry climate of the locality had kept the hay in excellent condition. The bales were made up of blue and black grama, vine mesquite, squirreltail and sagewort, all palatable and nutritious. An extended search revealed a remnant here and there of those grasses, enough to prove that once they did exist here. But now the expansive range was mostly barren, exposed to water and wind erosion. There was a sprinkling of invading plants, mostly brush and burro grass.

Investigating the history of the old baler to satisfy our curiosity, I learned that slightly more than 7 years earlier it had put up 440 bales of hay cut right where it stands today. A careful combing of square miles of that area now wouldn't produce enough of that good grass to make half a bale. Abuse of the range and drought had killed out those palatable and nourishing grasses in 7 years.

A laboratory analysis of the 7-year-old hay in the baler showed that it had an 8.06 protein, 1.29 nitrogen, 0.79 calcium and 0.122 phosphorus content. That's good composition for fresh grass.

I have not been able to trace use of the antique baler beyond 1925 when it was operated by Dude Hamilton, a cowboy employed by Lee Moor. It now stands abandoned, relic of a once-flourishing range, on leased land that is part of Moor's 500-section ranch.

We should look upon the old baler as a warning to us all to do something about saving our grassland before it is too late. Fortunately, Moor is doing something about his land. Under a coordinated soil conservation program which he is applying as a cooperator of the El Paso-Hudspeth Soil Conservation District, he is restoring the original grasses. In time, this vast area will again be covered with soil-protecting, cattle-fattening grasses.—J. H. JOHNSON, District Conservationist, Soil Conservation Service, El Paso, Tex.

**YOUNG MAN WITH VISION.**—When Lupe Flores came home from World War II in 1945, he decided that something should be done to make his father's 92-acre farm near Fabens, Tex., more productive. He could see no reason why only 50 acres of the farm would produce a crop—and that crop only half the neighborhood average. To be

sure, much of the farm was composed of rough areas once covered with brush and salt cedar, but young Flores was convinced the whole farm could be made into a productive and profitable enterprise.

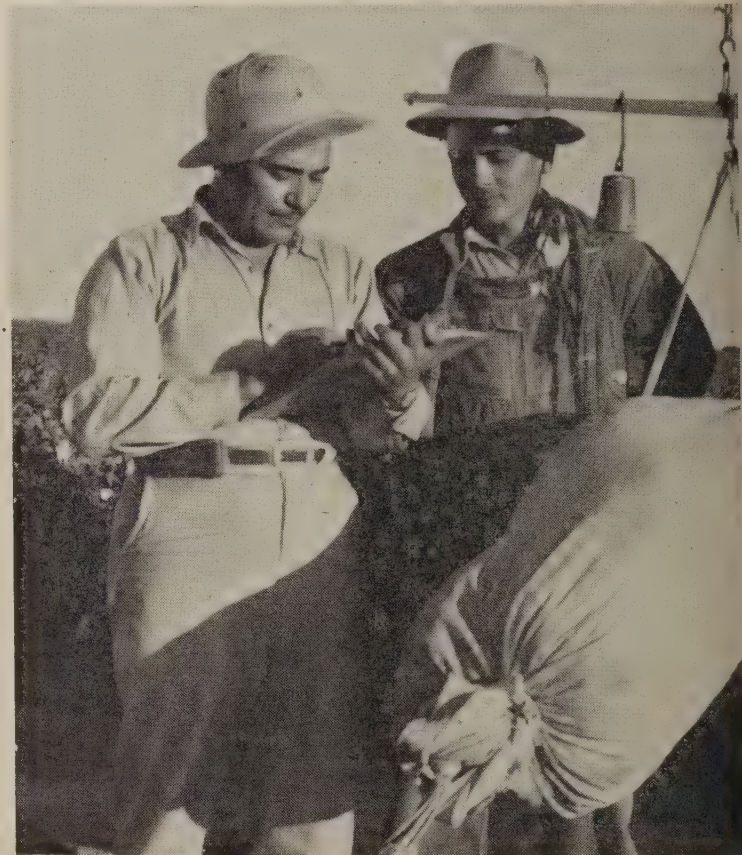
Flores talked things over with a supervisor of the El Paso-Hudspeth Soil Conservation District. Result was that he entered into an agreement with the district to apply a coordinated soil conservation program to the farm. As a district cooperator, he received help from SCS technicians in planning and applying a program to fit the specific needs of his father's land.

The plan that Flores developed with the technicians centered around reconstruction of the farm's irrigation system. This involved clearing and leveling the rough areas, filling old river channels, digging new irrigation ditches and installing ditch checks and turnouts. After preparation of the land for irrigation, Flores was to turn under a large tonnage of green manure and to leach areas with a high salt content.

The plan also called for rotation of cash crops with soil-improving legumes and the use of fertilizers as soil analyses showed they were needed.

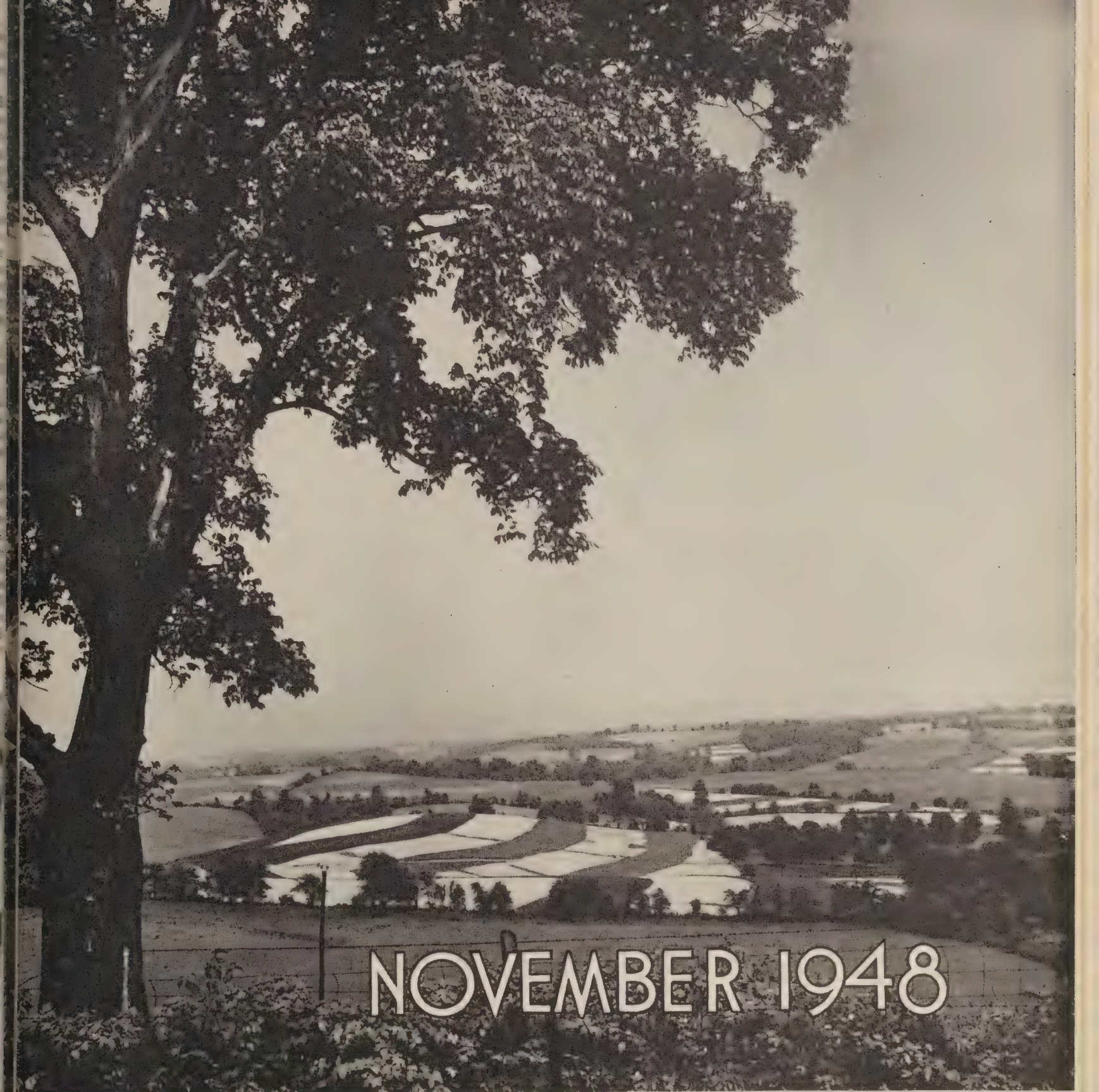
It was a big undertaking for the youthful Flores but his father gave him full authority and told him to go ahead. His dad gulped, though, when Lupe borrowed \$5,000 to carry out the conservation plan. But results have justified Lupe's confidence.

Last year 80 acres were in production, 45 in cotton and 35 in alfalfa. Some of the fields that had been wasteland produced a bale per acre on the first picking. The 45 acres produced 77 bales. The new alfalfa fields produced 4.3 tons per acre. Flores made enough from the 80 acres last year to pay off the \$5,000 loan and still have more left over than the farm netted in 1945. His timetable called for bringing 10 of the remaining 12 idle acres into cultivation this summer, leaving only 2 acres needing improvement to bring the whole farm into production.—JAMES H. BARKSDALE, Agricultural Engineer, Soil Conservation Service, Fabens, Tex.



Lupe Flores records weight of cotton just brought in by picker. A Battle of the Bulge wound that restricts use of arm has not handicapped young Flores in applying soil conservation program.





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**WELLINGTON BRINK**

Editor

Art Work by

**W. HOWARD MARTIN**

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with approval of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

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**A CRIME INDEED!**—The McLennan County, Tex., grand jury recently made the newspaper headlines in Texas by submitting an oral report labeling soil erosion a crime and recommending that the county buy equipment to help farmers protect the land.

When the grand jury met in the county seat, Waco, one of the jurors, Herbert Manske, obtained permission of the foreman, H. C. Buchanan, to discuss the seriousness of erosion in his precinct, county, and McLennan County Soil Conservation District. He said that it seemed as though the county commissioners were concentrating on the maintenance of roads but emphasized that there would be little need of the roads if something was not done immediately to conserve the soil.

Upon request, the district attorney advised the grand jury that it was within its jurisdiction to declare soil erosion a crime. Impressed by this unusual action, the attorney notified the Waco News-Tribune. As a result, a detailed story was published on the front page. Put on press association wires, the story was carried also by other Texas newspapers.

**USEFUL MAGAZINE.**—"May I add that SOIL CONSERVATION very frequently supplies me with valuable material serving as a basis for articles?" writes a columnist for the Habana newspaper *INFORMACION*.



**THE COVER.**—Strip cropping on the Spoon Creek watershed of the Coshocton County Soil Conservation District, Ohio. Parts of five farms are seen. They belong to Ray Tomlin, John Lavray, William Rogers, O. R. Laymon, and Gerald Hamilton. Photographer is Hermann Postlethwaite.

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# WHY WASTE WOOD?

By A. C. McINTYRE

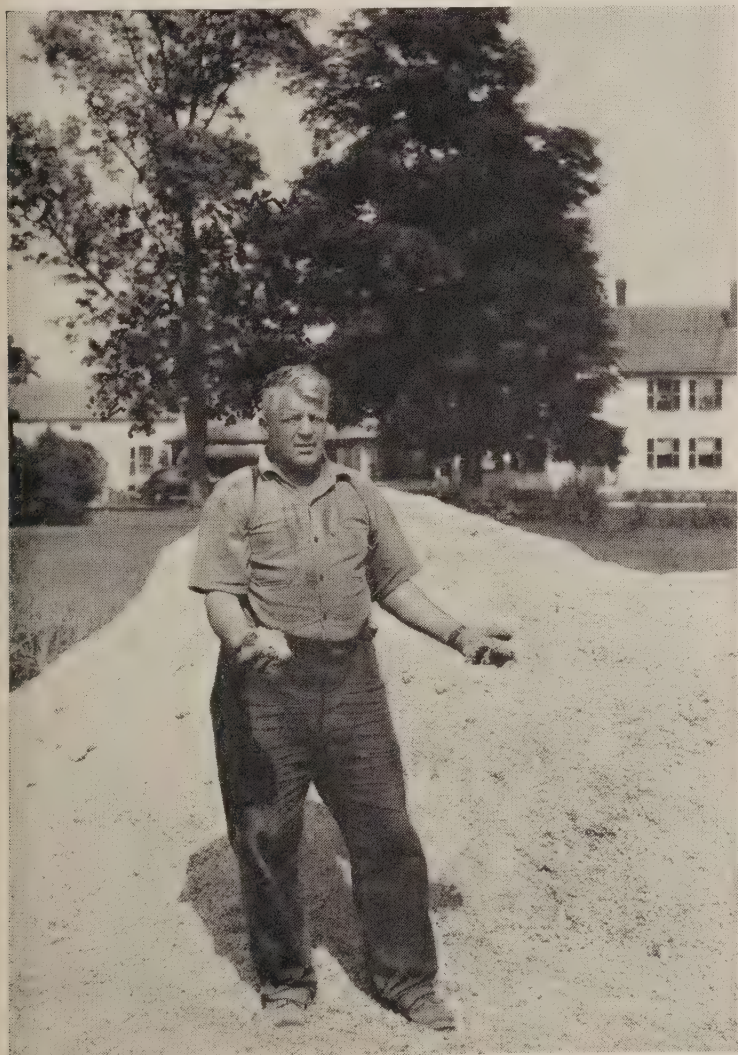
**W**HY ARE not sawdust and wood chips more generally used as direct aids to soil conservation?

Are conservationists, agronomists, soil scientists, foresters, and farmers bypassing wood as a direct contributor to soil husbandry?

A good answer to the first question might also answer the second.

Wood is organic matter—cellulose and lignin—and our soils, of course, need organic matter. Productivity and resistance to erosion have been correlated to the percentage of humic material soils contain. Infiltration rates and water-holding capacity are influenced by organic matter. Mulching has a place in soil husbandry but availability of materials, and costs, are limiting factors to its general adoption as a regular farm practice.

NOTE.—The author is chief, regional forestry division, Soil Conservation Service, Upper Darby, Pa.



Chadbourn stands before one of the numerous piles of chips and sawdust to be found on the farm.



Custom-built wood chipper operating near Providence, R. I. This machine can handle trees up to 5 inches in diameter. The chips are good for bedding, mulch, and incorporation in the soil as organic matter.

Is it feasible to use wood directly as a soil organic supplement and have it available in volume and at low cost for this use and as a mulch? There are two places to go for answers: reports on research, and the experience of farmers, orchardists, and gardeners.

Researchers have had an exploratory interest in the agronomic value of sawdust, but most of their studies have been limited. More work seems to have been done in European countries than in the United States. Many reports on studies of organic matter give passing comment on wood or sawdust, and there is considerable contradiction. Separating fact from mere rationalizing is not always possible. Legends recounting "ill" effects of wood seem to have a strong hold on the minds of farmers and certain writers.

In assessing potentials in the use of wood it is necessary to consider several accepted values of organic matter, recently summarized by Bear (1):

It serves as food for various types of desirable soil micro-organisms.

It supplies essential elements for reuse by succeeding plants.

It aids in improving the physical qualities of soils.

Its presence as living or dead material on or in the soil aids in the control of erosion by wind and water.



In mulch form it increases water intake, reduces water loss, lowers soil temperature.

Many other more or less obscure values may be assigned to organic matter. The possibility exists that plant-stimulating hormones are released during its decay. Farmers believe it has crop-insurance value, both in getting young seedlings through the soil crust and in protecting plants against various other adversities.

The chemical composition of wood is slightly variable, depending on tree species. It can be generally accepted as an organic substance composed of 60 percent lignin and 40 percent cellulose, with some waxes, tannins, and resins. As a fertilizer, fresh sawdust is in the same class as straw, hay, or corn fodder, all of whose N-K-P values fall about 4-4-4. The average for wood is estimated at 3-2-4.

Several comprehensive studies have been made on the value of wood as organic matter. Viljoen and Fred (2) studied the effects of different kinds of wood on the growth of oats and clover. They found the unfavorable action of wood on plant growth was due to a lack of nitrate in the soil. Using wood-pulp cellulose as a check, the same results were obtained as with wood. They concluded it was unlikely there is any toxic action on plants due to such wood constituents as oils, resins, and tannins. They found the lack of nitrate due to a reduction rather than an inhibition of nitrification, and this reduction was caused by a group of organisms that make use of cellulose. (The same organisms and nitrogen deficiencies appear when other organic materials decompose.) Their work appears to have established that the reduced growth of plants following the application of wood is closely connected only with a loss of nitrate and that this injury soon passes off and is almost without effect the following season.

Turk (3) drew similar conclusions. "Experiments . . . all indicate that the depressive action of sawdust on plant growth is the result of a deficiency of soluble nitrogen . . . in soils higher in nitrogen, no depressive effect is likely to occur . . . well rotted sawdust usually has no detrimental effect."

Butterfield (4) reports: "If sawdust is supplemented with some readily available source of nitrogen, it can be added to soils without fear of harmful effects. In all the greenhouse experiments, nitrogen, whether in the form of dried blood, inorganic nitrogen, or manure, overcame



**Strawberry field mulched with chips and sawdust. There are no weeds here.**

the detrimental (nitrogen grab) influence of sawdust. . . . nitrogen added in sufficient quantities to give the sawdust the equivalent of about 2 percent N will overcome the detrimental effects of the sawdust in soils very low in available nitrogen." Turk (3) said, "On the average, perhaps one-third of a pound of ammonium sulphate per cubic foot of fresh sawdust will meet the nitrogen demand. . . . 500 pounds of ammonium sulphate should be used with each 10 tons of dry sawdust."

Midgley (5) found that shavings and sawdust supply active energy material and raise the temperature of manure to the same extent as does mature hay. The wood acts like other carbonaceous materials.

Wood does not produce excessive soil acidity. Pine or other softwood sawdust contains less basic material than that from hardwoods. Upon decay most of the organic acids are used by organisms or lost into the air, leaving a neutral or alkaline residue. Sawdust from tree species like oak contains large amounts of tannins and terpenes but the latter seldom hold over in soil because soil organisms destroy them. Data indicate that pH will be affected by not more than two-tenths. Locally recommended liming programs will suffice to meet requirements.

These studies and others lead to the conclusion that wood itself does not produce a toxic soil condition, and the incorporation of fresh wood in the soil results in a nitrogen grab that is reflected in decreased plant growth. If the nitrogen requirement is met, no depressive effects will be observed. Research on nitrogen requirements under varying conditions of size of wood fragment, or physical nature of soil medium, is lacking. Studies seem to establish that if nitrogen is added with the wood,



beneficial effects, as measured by crop yields, will occur.

It is accepted that a beneficial physical effect accrues to soils by mixing sawdust with them. Adding sawdust to heavy soil has improved its structure, as reflected by ease of tillage and infiltration rates. Aeration is improved. Sawdust and shavings have a high water-absorbing capacity and contribute this quality to both heavy and sandy soils. One pound of sawdust can absorb



**Chadbourne employs boys and girls to pick beans. He picks up the youngsters in his truck; allows them an hour and a half for lunch, which gives them time for a swim in the lake; takes them home in the afternoon.**

two to four times its own weight; shavings about twice their weight.

While there is no reported research on the use of chips—small fragments or wood chunks—it is reasonable to assume the incorporation in soil of wood in any form will improve its physical properties.

There is no reason to assume that wood could not make as great a contribution to the control of wind and water erosion as many other sources of humus material. It is well established that there is a direct correlation between the erodibility of a soil and its organic matter content. One of the values of a crop rotation is to maintain or build up the percentage of organic matter. Wood, readily available in the woodlots of thousands of farms, might be used to aid conservation programs.

Sawdust and shavings have been used as a mulch. They have given the same beneficial effects—increased water intake, reduced water loss, and low soil temperature—as have other organic materials. It has been observed that sawdust is easily washed

or blown away; shavings remain in place much better. No research is reported on use of chips or fragments, which are probably the best form for wood mulch.

Many farmers and orchardists have used sawdust and shavings with excellent results. Both research and practical experience have established the value of sawdust and shavings as bedding material. As absorbents they are about equal to chopped straw and twice as effective as unchopped wheat straw. For balance, about 50 pounds of 20 percent superphosphate per ton of manure should be added. Trial plot studies comparing sawdust manure with that of straw manure have repeatedly returned equal or greater yields on the sawdust plots. Farmers who have used sawdust or shavings for many years report that soil health has improved and crop yields increased.

Use of sawdust on the Barkdoll (6) and Chadbourne (9) farms has made a major contribution to the agronomic and economic successes these two farmers enjoy. Of particular interest are the memories of Barkdoll's neighbor Geesaman (6), who, after helping with the harvest, found sawdust, not soil, in his shoes. The quantities of sawdust used were such as to fill the soil and remain on top as a mulch in the corn fields. Sawdust covers the soil of the pastures. For more than 30 years sawdust in great quantities has been used. There are no toxic conditions to be observed as a result.

Several years ago a vegetable grower, W. P. Starkey of Buck Hill Falls, Pa., leased a large acreage of scrub oak forest land in north central Pennsylvania. The scrub oak was typical of the type. Fire had occurred repeatedly at about 5-year intervals. The soil was a sandy loam, recognized as droughty. Removing only large stumps and scattered pitch pine stems having a diameter greater than 3 inches, the operator disked and plowed all woody material directly into the soil. Analysis indicated a soil organic content of about 10 percent. A thousand pounds of 4-8-6 per acre each year has returned excellent yields of snap beans, and two crops of spinach. A neighbor, observing results, has plowed down several hundred acres of scrub oak. His soil tests indicated that more than 8 percent organic matter had been cut into the soil. A half ton of lime and 500 pounds of cyanamide returned a "grand yield of potatoes." Last year a thousand pounds of 5-10-10 was applied and again a good crop of potatoes



resulted. This year a new 100-acre field was added. Standard equipment was used—a two-row planter and unmodified digger. Chunk wood and scrub oak stumps, of course, did slow up machine work. The operations deserve study because wood was used directly as an organic soil supplement.

Berry growers have used sawdust and shavings with good results. Farm journals contain many interesting success reports. Orchardists have used sawdust and chips as mulch, and repeated use has established values. There is interest in a report (10) on the use of fir sawdust as a mulch in a pear orchard. Heavy soils were creating a problem of water intake. A yearly dressing of 3 inches of sawdust, and disking under with a cover crop of rye and a legume, resulted in "fine yields, good water penetration and the saving of irrigation." Soils men checked the soil structure and found a great improvement in tilth that increased with the age of the treatment. Fertilizer was used at the rate of 200 pounds of N in three applications and 100 pounds of  $P_2O_5$  in a fall application to stimulate the legume cover crop.

Is empirical research ahead of planned research? If wood is making a real contribution to the farming practices of a few, can it not also aid others? Of course, economics and costs must be considered. Millions of tons of sawdust are wasted. Sawmill men usually find sawdust and shavings a costly handling item and welcome removal. A few mills have installed "hoppers" as an invitation to farmers to remove it. However, if agriculturists were to advocate the use of sawdust, or more farmers learn by trial that wood can contribute to farming, there would not be enough sawdust to meet the demand. Because of demand for shavings as bedding in some areas, they are competitively priced. Volume is largely dependent on planing mill operations. A few mills have installed hogs or hammer mills for the conversion of lumber waste into bedding materials. Again volume is limited.

Light portable wood chippers are available. Designed to convert chunk or pole wood into chips acceptable for bedding, these machines are being used in the wood lots to produce pulpwood chips.

A study (7) of production of hogged wood for fuel in 1942 indicated that pole wood in 8- to 12-foot lengths could be converted to chips at a cost of \$1.15 a cord. It is estimated that today's cost would be about \$2. This includes all items of conversion from the pole pile to the mound of chips.

A cord of wood weighs about 2 tons. Thus, the cost of converting chunk wood to chips would be \$1 per ton. A comparable cost figure was arrived at (8) in Rhode Island. In this case for \$1 per ton a chip was produced about the same size as that of wood fragments being used for bedding. The cost of getting out chunk wood should not exceed \$2 per ton. Such wood should come from small tops and other polewood logging debris, and particularly from woodland thinnings.

It is recognized that woodland is producing at least 2 tons of wood per acre (cellulose and lignin, organic matter) each year. If this wood is not harvested from normally stocked woodland, it is lost to farmer use. It can be harvested without reducing productive capacity. Census data show that in most States east of the Mississippi about 25 percent of farm land is woodland. Thus there would be available each year per average farm about 50 tons of wood that might be converted to chips and used as mulch, bedding, or added directly to the soil. This might be an answer to the question so often asked by foresters: "Where is there a market (or use) for low grade material in wood lots that should be removed to improve growing stock, and how can logging waste be economically utilized?"

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# DISTRICT PROFILE

BOB  
RUTTER  
Cattleman



R. L. (Bob) Rutter, Jr., is a fast-moving, blunt-spoken cattleman from the rodeo city of Ellensburg, Wash., where everybody knows his twin loves are Aberdeen-Angus cattle and soil conservation.

Son of a pioneer Spokane banker, and with a trace of Indian blood in his veins, Bob has lived on the same irrigated farm northeast of town for the last 35 years. He parts his black hair in the middle, and his dark eyes are surrounded with "laugh" wrinkles.

Bob is pretty busy. He's chairman of the Kittitas Soil Conservation District. He helped organize and served two terms as president of the Washington State Association of Soil Conservation District Supervisors. In addition, he was a member of the organizing committee and the first vice president of the National Association of Soil Conservation Districts.

Just now he is serving a freshman term as State senator, and is a member of the Joint Legislative Interim Committee on Un-American Activities in the State of Washington.

Until he filed for office he was president of the Kittitas County Farm Bureau, which he helped

organize a quarter century ago. Bob also has been a director of the Washington State Farm Bureau and a member of its soil conservation committee. While he was in the turkey business a few years ago, he was vice chairman of the American Farm Bureau's Poultry Committee.

He's on the executive committee of the Washington Taxpayers' Association, a member of the board of directors of the Washington State Reclamation Association, and a commissioner of the Ellensburg Housing Authority. He is a director of the Washington Cattlemen's Association. During the war he was chairman of the Kittitas County Selective Service Board.

Bob changed from dairy cattle to beef several years ago. Until recently he owned a show herd of blacks of the famed Rosemere strain. He sold the show herd because he hasn't the time to spend with it. He has a commercial herd of grade Angus cows and purebred sires.

Bob has revamped his irrigation to gain greater efficiency and better drainage. He also has enjoyed excellent results with improved pastures and native grass pastures which he fertilizes each year. Bob runs all his cattle on irrigated pastures. He does not own or lease any range.

The Kittitas Soil Conservation District, organized in 1942, was the first district in the State to sponsor, guide, and reward a conservation 4-H club. The district's 40-acre demonstration pasture is attracting a lot of attention. It was stocked with 100 cattle most of the season to keep it grazed properly. It has shown the potentialities of using gravelly Class III and IV lands properly.

Bob's wife, Mable, really keeps the ranch going. Mrs. Rutter, gracious, energetic, and a gifted pianist, shares her husband's enthusiasm for soil conservation. They have two sons and a daughter.

Robert L. 3d, the oldest, was a lieutenant commander in the Navy and now is manager of Radio Station KXLJ, Helena, Mont. Gale served in both the Navy and the merchant marine and now is at Harvard University. Olive, their daughter, is at home. Bob hopes that one of the boys, after some seasoning in the business world, will return to the farm to take over active management.

You don't have to be around Bob long till you find out why he's enthusiastic about soil conservation districts and the work they are getting done everywhere.

*(Continued on page 81)*



# SANDHILLS OF NEBRASKA, EXAMPLE OF GOOD LAND USE

By HUGH BENNETT

THE SANDHILLS of central Nebraska are beautiful in this mid-August forenoon sunshine. For hours I have been enjoying the uninterrupted loveliness of the landscape from a train.

As far as the eyes can see, the entire area is brilliantly verdant in the luminous sun. Everything but the lakes is densely and refreshingly clothed with the greenest of grass. And the lakes nestled in the dimpled depressions among the dunes and meadows are as crystal-clear as rain-water.

There were wild ducks on many of the lakes the morning I jotted down these observations. And there were various other water birds about those flashing pools of sand-filtered water; among them blackbirds, gulls, kildees, and white herons. Mallards and small ducks were rather plentiful. Some put to flight as our train passed by; others skimmed away, plowing out diminutive furrows across the surface of the water. Some stood motionless, apparently having become accustomed to the train as a harmless monster.

White-faced cattle grazed contentedly in groups of small and medium size, scatteringly or in compact formation. It was cool enough for the calves to be frolicsome.

Here in the Nebraska sandhills the country has not been greatly disturbed by man, although extensively and rewardingly used. It is still grass-covered, much as it was, probably, soon after the close of the Ice Age. And that is the point of this article.

These Nebraska sandhills I have long thought of as the best example of sound land use that we have on any very large scale in America. The area is used almost exclusively for grazing. Some hay is cut for winter feed from the low flats where grass normally grows luxuriantly. Everywhere, practically, the grazing lands are used according to carrying capacity. An occasional small garden is seen in places protected from soil blowing by the local surface configuration.

For the most part, Nebraska farmers have had the good sense to do two very wise things in their use of these sandhills: First, they have kept the

number of cattle safely within the grazing capacity of the land; second, measures are promptly taken to prevent blowing wherever the sod is broken through to sand by concentrated trampling around water holes and along cattle trails.

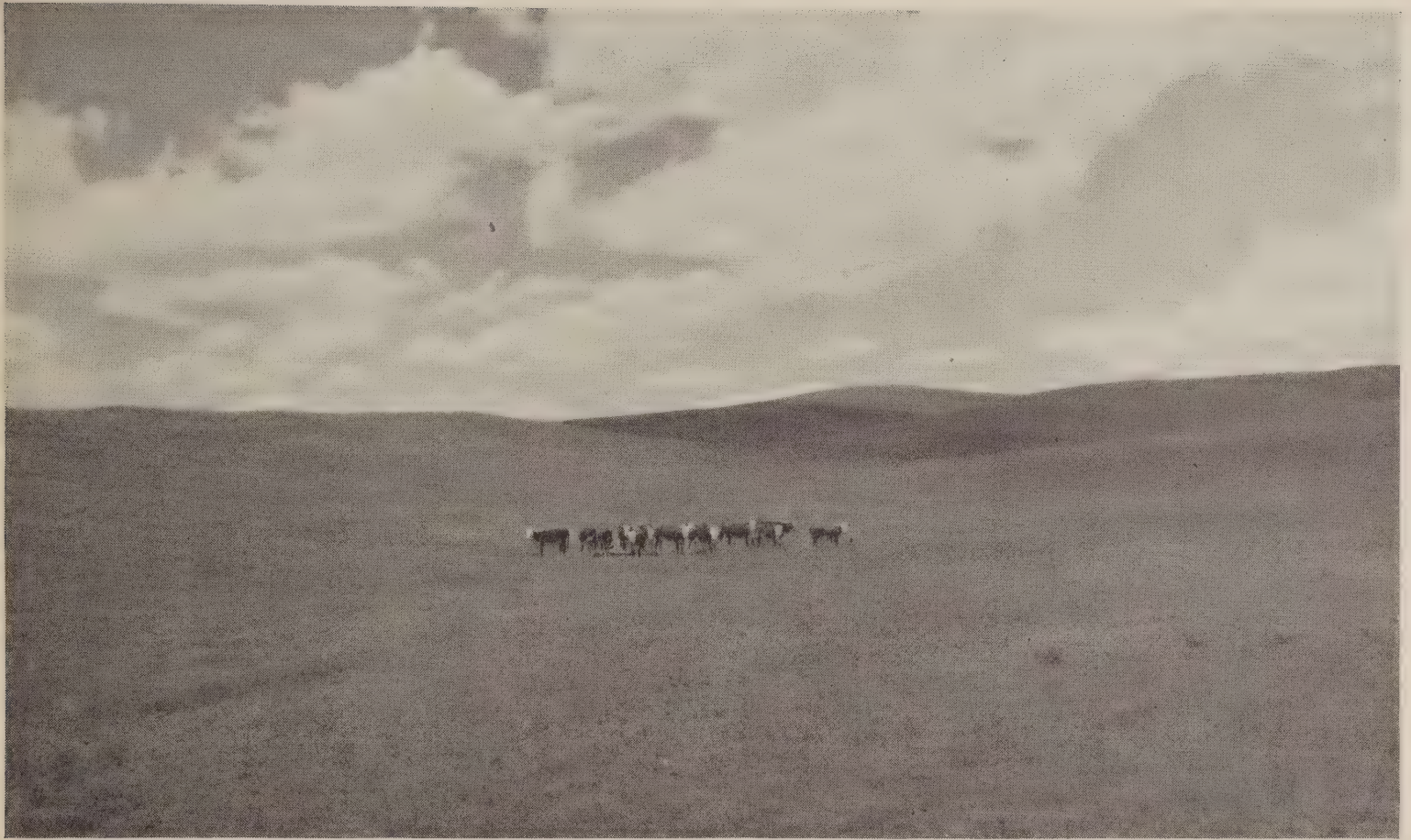
Even in times of high prices for beef, as at present, these Nebraska ranchers rarely overstock the range. I think they must have learned long ago that overgrazing exposes the loose sand that lies immediately beneath the grass. Under the trampling of excessive numbers of cloven-hoofed animals, the grass sometimes is cut to pieces in just the right way to start blowouts—wind erosion that is not too easy to stop if allowed to run along without attention. I suspect, too, they have learned from experience that while there is plenty of grass in years of good rains to hold everything soundly together, droughts do come along now and then in sufficient severity to weaken plant growth and put the land in just the right condition for wind erosion where there is any overgrazing.

In other words, the land users of the sandhills of central Nebraska have been seeing and understanding the capacity of their grazing lands, and acting accordingly. They have come to know that sandy land bared of protective vegetation is dangerous to have around a ranch. And, to their very great advantage, they have learned to cooperate with Nature in order to keep the land permanently productive.

Concentration of cattle does sometimes break the turf and start blowing and even some local washing of the soil. But the bared areas are not permitted to spread. Without too much delay, they are plastered all over with manure or old hay, or they are seeded to appropriate protective crops, including, as you might suspect, adaptable grasses.

To look at this country, you wouldn't think the ranchers would be especially interested in soil conservation. But they are, and very much so! Not only are they good users of land, they are thoroughly progressive people otherwise. They want and demand the full advantages of progress—the best that man has been able to garner from research and experience. If there are better grasses, they want to try them; and if the trials prove successful, the directors of the local soil con-





There is comforting goodness in the greenness of the grass, the sunny skies, and the fat cattle of central Nebraska's landscape.

ervation district are sure to be called on for the assistance of the Soil Conservation Service technicians assigned to the district in getting seed supplies and in planting in the right way, at the right place, at the right time.

That is as it should be. It means even better use of the land than just good average use, such as you can find over much agricultural land in many localities. And it means fat cattle, good calf crops, good income, contentment—and land safeguarded for permanent use.

Life is really worth living in this great area of summer verdancy. And I wonder if there isn't some fishing, too, in some of those shining blue lakes?

## BOB RUTTER

*(Continued from page 79)*

"We district supervisors," he said not long ago, "take pride in the fact that our type of assistance increases the individual farmer's responsibility in seeing that his land is used properly.

"The soil conservation district program goes a long way to increase the farmer's sense of responsibility for husbanding his land. This is in contrast with some other programs which I feel serve mainly to demoralize him and weaken his responsibility to our Nation."

It is easy to understand Bob's philosophy when you read a tablet on a boulder on Swan Island, where hundreds of ships were built during the war.

The tablet, entitled "The Spirit of American Enterprise," was placed there in 1941 by the Oregon Historical Society. It says: "The 'Star of Oregon,' first sea-going ship built in Portland, was launched here May 19, 1841, through the courage and foresight of those daring pioneers, Capt. Joseph Gale, Pleasant Armstrong, Ralph Kilbourn, Jacob Green, John Canan, aided by Capt. Charles Wilkes, U. S. N., Felix Hathaway, Thomas J. Hubbard. This project brought great benefits to the settlers of the Oregon country . . ."

The Capt. Joseph Gale mentioned in the tablet was Bob's great grandfather on his mother's side.

—F. GLENNON LOYD.



# *The* MORE LAND HE GETS *the Better He Keeps It*



They're justly proud of this young peach orchard: Dave Yarbrough (left), Lewis Avant (Dave's son-in-law), and Harry Yarbrough.

By R. Y. BAILEY

**F**ROM SHARE CROPPER in 1908 to owner and efficient operator of 12,000 acres is a long step. That is the 40-year achievement of Dave L. Yarbrough, chairman, board of supervisors, Central Alabama Soil Conservation District.

Yarbrough, who lives on his farm near Prattville, is not a large land owner of the type who makes money in other business and buys all of the acreage he can get. He is an active farmer who began as a share cropper in 1908, was a full renter (he then owned his own work stock) in 1909, and bought his first 60 acres in 1910. Few years have passed since 1910 that he failed to buy additional land.

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NOTE.—The author is chief, regional agronomy division, Soil Conservation Service, Spartanburg, S. C.

Yarbrough is vice president of a bank, operates a large hardware business in town, and he and his son, Harry, run an automobile agency in Prattville, and other kinds of business. Unlike most businessmen-farmers, the Yarbroughs are farmer-businessmen. Their primary interest is in the land where they got their start. They live on the land and have others handling the details of their town business, whereas, most businessmen bought land with profits from their town or city business enterprises and have someone else living on and looking after the land.

Ownership of so much land entails certain obligations to the land and to the people who live on it. While riding over a portion of his home place early one April morning, Dave Yarbrough showed me some of the things he was doing for the land and told me a few stories that gave me insight into



his relations with the people who live on his land.

A steep slope with a beautiful stand of loblolly and slash pine growing on it was one of our interesting stops on this spring morning. Standing on a high place overlooking the pine-covered slope, Yarbrough said, "I planted these trees the year after the cotton plow-up. I plowed up cotton here on this steep land in 1933. I've planted 5,000 to 10,000 pine trees every spring since then." This first planting of pine trees was a beginning of better land use.

Timber cut from their own land has been used in building houses for each of Yarbrough's children who chose to settle on the land. Each one received a modern new house as a wedding present. These houses were built on land deeded to them at the time of their marriage.

When the Central Alabama Soil Conservation District was organized in 1940, Dave Yarbrough became a member of the board of supervisors representing his county, Autauga. With the assistance of Soil Conservation Service technician Bill Aiken, Yarbrough developed a soil and water conservation plan. It provided for the conversion of steep slopes to adapted perennial vegetation. Some of this cover was additional pine trees on slopes that were steep and eroded, or were so located that trees were the most desirable kind of cover. Other steep land was planted to kudzu and sericea lespedeza, both of which are used for pasture.

Hundreds of acres on which cotton formerly grew have been recognized as being too steep for safe and profitable cultivation and are now covered with sericea, kudzu, or pine trees. When the acreage he owns is taken into account, the progress Dave Yarbrough has made toward getting all of his open land that is too steep for cultivation under protective perennial cover is a remarkable achievement.

The land on moderate slopes that remains in cultivation is terraced and cultivated on the contour. It is part of the plan for all cultivated land to be under cover each winter. This goal has been met on the home place and is being approached on outlying tracts. All of the winter cover crops are seeded with seed harvested on the Yarbrough farm.

Winter cover crops of reseeding crimson clover (Autauga County strain), vetch, and blue lupine are used. Crotalaria is one of the summer legumes

that is well-liked. This legume grows as a volunteer after oats and after the last cultivation of corn.

Cotton, corn, and winter vegetables are the principal cash crops from the cultivated land. The city of Montgomery, 9 miles away, is a good winter market for such vegetables as turnips, mustard, and collards.

Hogs and beef cattle are the principal livestock enterprises. Both classes of livestock get a large part of their winter feed from oats and crimson clover. Crimson clover is especially valuable as a winter and spring pasture for brood sows. Local hog farmers swear by crimson clover as the best milk-producing green feed for brood sows. They place crimson clover above all other kinds of green feed for this class of livestock.

Autauga County has a local strain of reseeding crimson clover believed to be the best in the field. It was only when he was discussing the superior merits of this local strain of crimson clover that I heard Dave Yarbrough raise his voice above normal conversational tone. He did so to emphasize his belief in this plant that is doing so much as a protective ground cover, winter and spring grazing, and green manure crop.

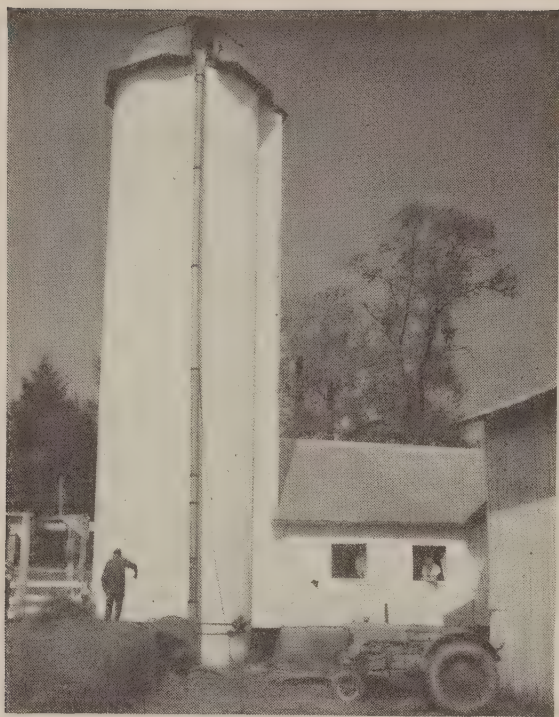
Kudzu is an important summer pasture for hogs and cattle, and sericea lespedeza is a major grazing crop for cattle on the Yarbrough holdings. Both are used on steep uplands not suitable for other pasture plants. Lowland pastures of Dallis grass and white clover form one of the major parts of the grazing program.

It is an accepted fact on this farm that all kinds of pastures, sericea, kudzu, winter legumes, and lowland grass and clover must be limed and fertilized. Dave Yarbrough is not one of those optimists who believes he has found crops that will grow on poor soils without being fed. He is a regular and liberal user of fertilizer.

Earlier, I mentioned the relationship between Yarbrough and the people who live on his extensive holdings. This can best be told by relating one or two stories he told me while we were looking over some of his land. When I asked how often his tenants moved, he said, "I have tenants who have been with me since 1914." To these long-time tenants he is either "Cap'n" or "Mr. Dave." Both white and colored tenants respect his judgment and consider him a "good man to live with."

*(Continued on page 86)*





The freshly wilted grass is chopped and blown into the silo. Salt is added to preserve the mixture and add flavor.

# Grass Farm

He produced enough corn to fill three silos, and fed silage to his cows the year round.

Nineteen years ago Rice grew his last crop of corn. He went all out for pasture. He specialized in seedbed preparation, grass-legume mixtures, and fertilization. He was willing to spend money to make money. His methods attracted wide attention, and today he supervises 11 other farms besides his own. He cooperates with the Northern Virginia Soil Conservation District.

At first Rice favored a pasture of rye seeded to sweet clover. But he soon decided that he "didn't like sweet clover because the cows didn't." After that he tried, and rejected, many different mixtures.

In 1937 Rice made a 10-strike. Acting on a small news item, a casual inquiry and a hunch, he sent off to Oregon for 15 pounds of the new wonder legume, ladino clover. Ladino has been

**By WELLINGTON BRINK**

**C.** T. RICE grows grass. He has the greenest farm I have ever seen. Seventy of his 90 acres are cleared. Last year those 70 acres yielded all the pasture his 35 Guernsey cows could use *plus* 130 tons of grass silage *plus* all the hay needed for winter *plus* 40 tons of hay for sale.

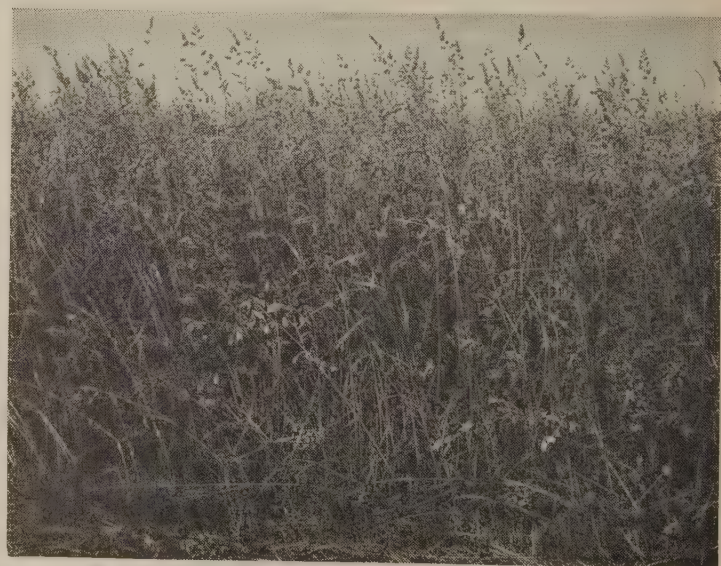
For many years milk production has averaged 9,500 pounds per cow; butterfat, 420 to 450 pounds. Milk sales have run \$16,400 to \$18,326 every year since 1940.

C. T. Rice purchased his farm in 1915. He knew land and cattle, and he had high respect for planning and management. He had attended Pennsylvania State College, then served the Southern Railway several years as dairy-development agent.

When he bought his place near Oakton, in northern Virginia, it was mostly brush, trees, and gullies. The soil was Manor, not the best or the worst. The land was rolling, bedraggled, tired.

Rice filled the gullies with brush and old logs, and soon could plow across them. First he tried corn. He figured he had too little land for pasture.

NOTE.—The author told the same story, leaving out some of the details, in the August issue of *Country Gentleman*, which has kindly agreed to its use in *SOIL CONSERVATION Magazine*.

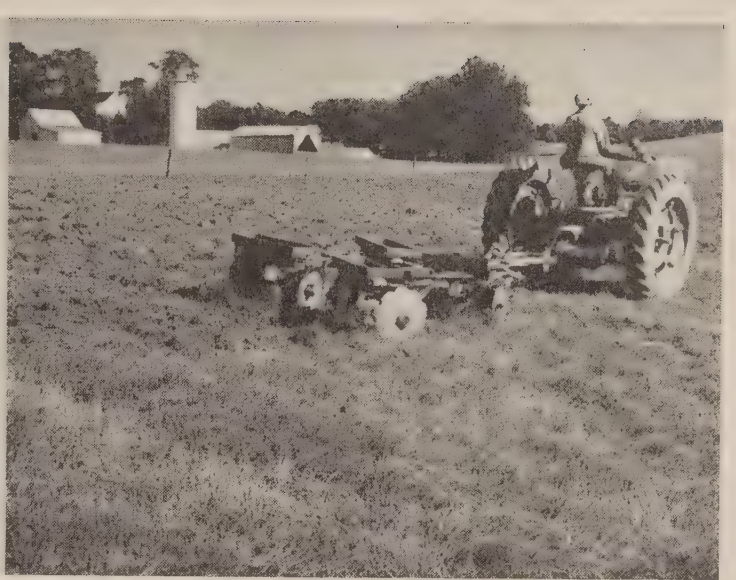


Rice maintains there is no finer hay mixture for the eastern part of the country than orchard grass, alfalfa, and ladino clover.

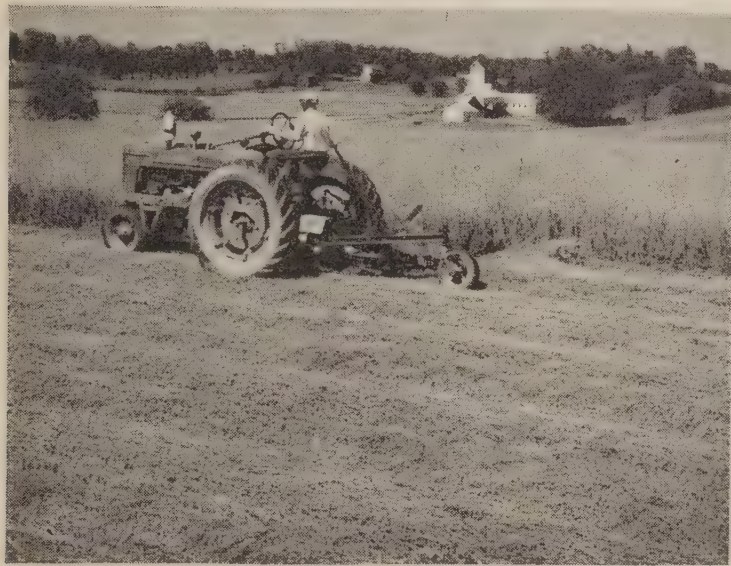




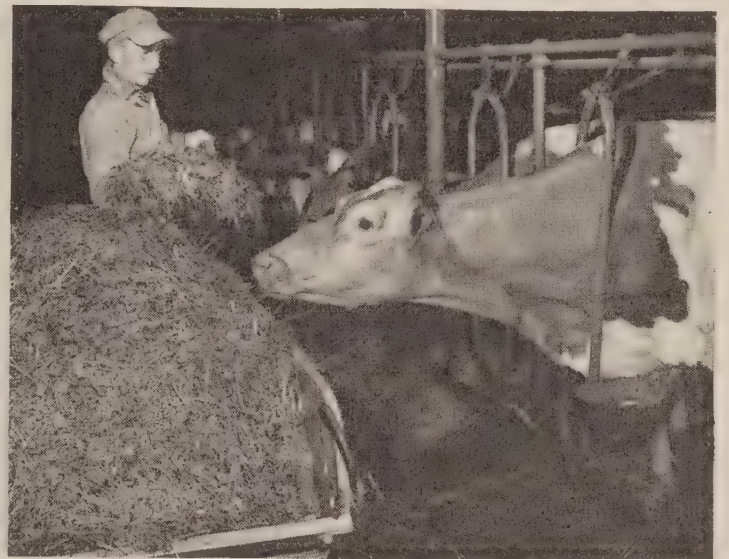
Rice examines new-mown grass cut by Farm Foreman T. M. Weeks. Seeding mixture on this field comprised orchard grass, alfalfa, and ladino clover.



Reseeding is done with disk. The heavy sod is disked, fertilized, and reseeded, keeping all roots and stubble on surface for mulch.



Care is exercised to make sure that the cutting does not get so far ahead of the pick-up and chopping operations that the grass will dry out lying in the field.



The grass silage these cows are so eager to get at has not lost any of its appeal after having been in the silo a year or more.



After the hay mixture has wilted precisely the right amount in the field it is picked up and hauled to the chopper at the silo.



After a field has served in rotation as a meadow the cows graze it until a predominance of bluegrass signals the time for reseeding.



a key part of his program ever since. He has some today that is 10 years old and still vigorous.

Rice uses four pet mixtures:

No. 1 consists of 2½ to 3 pounds of ladino clover, 3 pounds of red clover, 10 pounds of timothy.

No. 2 includes 7 pounds of orchard grass, 3 pounds of ladino clover, 4 pounds red clover.

No. 3 is made up of 15 to 20 pounds of alfalfa, 7 pounds of orchard grass, 2 to 3 pounds of ladino.

No. 4 supplies the earliest grazing: 20 pounds of domestic rye grass, 3 pounds of ladino clover, 3 pounds of red clover.

"Any or all of these make excellent silage when cut at the right stage and properly wilted," says Rice. "The timothy-clover mixture produces top quality hay at first cutting. The orchard grass-alfalfa mixture gives wonderful hay at second and third cuttings."

Why the heavy seeding of clover? To assure a quick, thick stand the first year, he explains.

Every 4 or 5 years, as legumes are crowded out by orchard grass and bluegrass, reseeding is indicated. All preparation is done by a cutaway disk harrow. A spring-tooth harrow is used to level the seedbed. Seeding itself is either by hand with a cyclone seeder or, in the case of the clover-alfalfa mixture, by drilling.

Each bit of pasture is fertilized annually, 600 to 800 pounds per acre. It is done in the fall. Rice uses whichever of these formulas is available: 2-12-12 or 0-12-12, or 3-12-6. He spreads lime every fifth year at the rate of 2 tons per acre.

The 70 acres are divided into 14 fenced lots for rotation grazing. The grazing season runs from April 1 to November 15. This year the cows were put on pasture March 29. Milk production jumped 15 gallons in 3 days—notwithstanding the well-balanced barn ration.

Rice begins with 5 acres of bluegrass which has remained in heavy sod and has been fertilized in January or February with 250 pounds of cyanamid per acre. The fertilizer steps up the grass so that it is ready to be pastured the first week in April—about 2 weeks earlier than the legume-grass mixtures. After that, the pastures which have not been used for silage are swung into rotation.

As soon as grazing ends in a pasture lot and the cows move off, the pasture is clipped to remove patches which have been refused.

Rice never allows his herd to spend an entire day or night on any fresh or succulent pasture. They are taken off just before dark and put in

a bluegrass lot. They are not allowed to lie down and foul the pasture.

"I always attempt to leave 4 inches of growth at the end of the grazing season," says this wise farmer. "This lets the runners turn over and protect the plant through the winter."

Even in dry weather, plenty of pasture is available. There's not only *more* feed but *better*.

But Rice does not skimp his cows. He gives them 20 to 25 pounds of silage per day—all they will eat. He fills the troughs with all the hay they will consume twice a day. He gives them less grain than most dairy farmers, however—about half the amount they would reach for, with corn silage; 200 pounds for all 35 cows.

No calves are kept. They are sold at 4 days old to people not in the business of selling milk. By agreement, Rice may buy them back when fresh if he chooses. It's cheaper than raising them.

Rice sells hay while most dairymen are buying. He puts his investment—freely—where it will pay off. He feeds his land as well as his cows. He has no gullies, no soil losses. Seed, fertilizer, soil, and water stay home. His farm is a veritable emerald isle in the frequently brown countryside.

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## THE MORE LAND HE GETS

(Continued from page 83)

Southern Negroes are among the best customers for burial insurance because it is only through their policies that some of them can hope to have a fine funeral. A burial-insurance salesman approached one of the older Negro tenants, Joe Dillard, on the Yarbrough farm about burial insurance. The old Negro man said, "Naw, suh! I don't want no insho'ance. Cap'n gwi'n bury me."

Following this little story, Dave Yarbrough went a little further and gave me an insight into how he feels about his stewardship of this land and the people who live on it. He said, "These old people will always have a house, food, fuel, and someone to take care of them when they are sick." This simple, undramatic statement explains to some extent why tenants have remained with him since 1914. It also exemplifies a relationship that exists between countless Southern landowners and their tenants.

The landlord-tenant agreement in livestock production has been worked out to the satisfaction



of both. Yarbrough furnishes the brood sows, the land, the fences, and the power and equipment. Fertilizer and seeds are on a 50-50 basis and the proceeds from the sale of hogs are divided equally.

Beyond the boundaries of his own land, Dave Yarbrough is a man of influence. Young and middle-aged farmers, who in their own right are rather extensive operators, show great respect for what "Mr. Dave" thinks about any subject pertaining to farm problems or matters of business. Incidentally, I never heard him give any advice or information that was not sought. The older men of the county who have known him for many years simply call him "Dave" in that certain tone that old and trusted friends reserve for each other. This friendly relationship between Dave Yarbrough and his neighbors makes him an effective and influential supervisor in his local soil conservation district.

This story would not be complete without at least a brief mention of the late afternoon gathering at the Yarbrough home of neighbors and friends from adjoining farms, from Prattville and from Montgomery for a barbecue. I was spending the night at the Yarbrough home and was told that Mr. Dave was having a little barbecue for a few friends. The "few" grew into a crowd of about 75. After all had eaten their fill of delicious barbecue and Brunswick stew, prepared and served according to the best Southern tradition, enough meat was left to have caused the average town dweller to rent a freezer locker and put the meat away to carry him through the winter.

Peaches are produced commercially, most of them being sold on the Montgomery and Birmingham markets. Like everything else on this farm, peaches of high quality are produced. While I was visiting him, Dave Yarbrough showed more pride of accomplishment in the excellent growth the trees in a young peach orchard were making than in almost anything else in his big and varied farm operations.

Many additional pages could be written about such things as the high yields of cotton, corn, and other crops; the extensive use of power equipment; the excellent woodland management practices; and countless other phases of this extensive farm enterprise. Space does not permit detailed descriptions and this tale must approach an end.

Before ending, however, I must say something about future plans. Dave Yarbrough is one farmer who does not intend for the work of a lifetime to be turned over to strangers who will destroy it. His son, Harry, and a son-in-law, Lewis Avant, actively assist with the farm operation and it definitely is in the long-time plan for this farm to stay in the family. Both of these young men work in the fields, and an outside man is hired as bookkeeper.

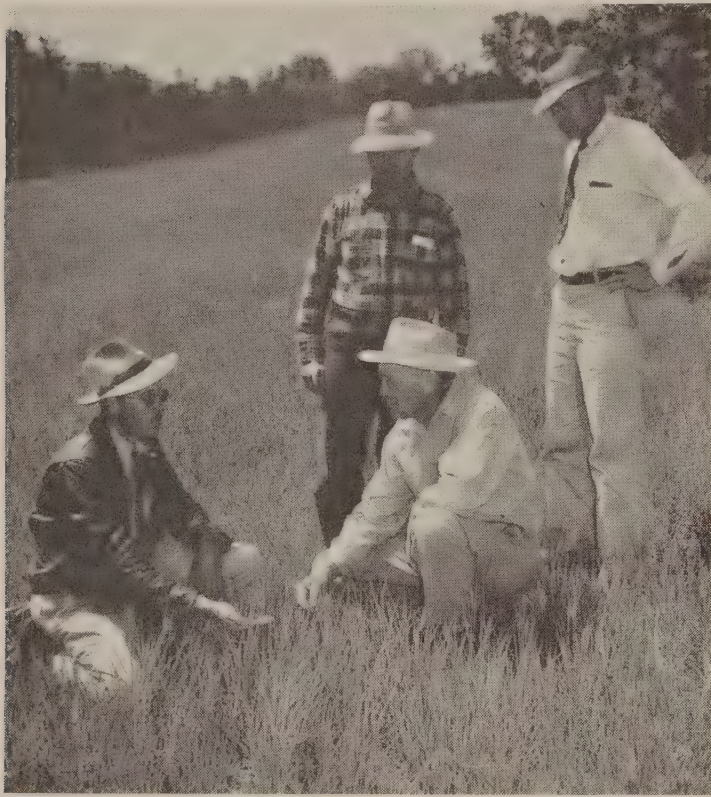
When Yarbrough turns the farm over to younger hands, another generation will be coming along. Several fine young grandchildren are growing up on the farm. If family tradition is followed, these youngsters in their turn will learn the business from the ground up so that when their time comes to take over, they, too, will be ready.



Row crops on the Yarbrough farm are cultivated on contour with tractor equipment.



## PACIFIC



Lush stand of Harding grass on Mitchell ranch last May. SCS technician Ralph V. Boatman (left), Dave Pennell, and L. Z. Mitchell, Corning, and H. E. Schroeder, Orland.

**HARDING GRASS.**—New hope for 60,000 acres of “threadbare” cattle and sheep range in the Corning Soil Conservation District in Tehama County, Calif., is seen in recent tests with a hardy Australian native perennial grass.

The lush, year-around greenness of the perennial from Queensland stamps it as a promising “replacement” for America’s vanishing bunchgrass stand. Tested the last 4 years at the Pleasanton, Calif., nursery of the Soil Conservation Service, Harding grass, as it is called, has survived the toughest kind of trials. Seeded with subterranean clover, under actual range conditions, it has triumphed over natural and man-made obstacles.

Once the rolling foothills of the coastal ranges west of Corning were covered by verdant bunchgrass. Cattle and sheep grazed shoulder high. Stock fattened, and ranchers profited from the rich, unspoiled grassland. Meanwhile, ranchers went on boosting the size of their herds. They paid little heed to the wear and tear taking place.

The bunchgrass cover wore out. Bald patches soon grew section-wide. It didn’t take long for the native perennial grasses to disappear, roots and all.

Stock raising today is far removed from the thundering herds of the bunchgrass era. Annuals have taken over the range. Only about half of the original range area around Corning is being grazed now. Good range is scarce.

Tehama ranchers have long sought ways to change the barren outlook. The successful tests with Harding grass came as welcome news. For, potentially, Harding grass is regarded by technicians as prime forage for more than 60,000 acres in the Corning district. Seeded to Harding

and subterranean clover, the range land ought to be capable of doubling present carrying capacity.

Ranchers who attended a demonstration trial on the L. Z. Mitchell ranch, 10 miles west of Corning, got their first look at Harding grass. What they saw was a vigorous, drought resistant, soil binding perennial, a grass that will stand up well under heavy grazing. It is palatable and winter growing.

On the Mitchell place 30 acres were seeded, together with subterranean clover, in three test plots. The trial seedings made near Corning are the only ones made in the Central Valley of northern California. The site selected for the trial was a piece of stripped-down range, worn to a frazzle by overgrazing. It is a sample of the 600 acres of lost range which caused Mitchell to switch from cattle to turkeys a few years ago. He hopes to rebuild his range with Harding grass. Then he plans to go back into the cattle business.

Planting of the Harding perennial last November was preceded by a period of summer fallowing in the spring. The land was disced several times during the summer to control weeds and prepare the good seedbed which is so essential.

Harding grass in June, when the native annual range is brown and dry, is still green and succulent. It averaged 5 feet in height on Mitchell’s plot in sharp contrast to the short, dried-up annual range nearby.

The long, blistering summers of California’s interior valley pose a problem for range forage plants. Annuals which complete their life cycle before the long dry summers have fared best.

If Harding grass has any draw-backs, it is the initial cost of seeding. Seed runs about \$10 per pound. About 4 pounds of Harding seed and 8 pounds of subterranean clover per acre are needed. Plowing, discing, seeding, and harrowing add another \$10 to \$15 to the bill. But as Mitchell points out, “Harding grass is like a brick house. Once you build it, it stays.” This year, due to favorable rains, Mitchell thinks he will realize over \$100 per acre from the harvesting of the seed crop.

The Corning staff of the Service is telling ranchers that Harding grass, with subterranean clover, is best suited to bald, overgrazed lands on favorable sites. Range specialists do not advise plowing up range with a cover of good annual forage plants, such as wild oats, bur clover, and cut-leaf alfalfa.

On this point, Hilton Taylor, in charge of the Corning office of the Service, says, “Here proper management is a more economical solution.” He warns that overgrazing will cause the perennial Harding grass stands to disappear like the original perennial covers. He adds that proper management is even more essential on perennial than on annual ranges.—Herb Boddy.

**SAVE THAT WATER!**—A field check of mounting irrigation water losses, aimed at mending the “leaks” in 31,000 acres of intensely farmed cropland in Oregon’s Deschutes and Crook Counties, moved into high gear this summer. The water-saving survey is being carried out under joint action of the Mid-State Soil Conservation District, the Central Oregon Drainage District, and the Soil Conservation Service.





**Anton Winkel (left), SCS technician at Redmond, Oreg., and Olaf Anderson, manager of Central Oregon Irrigation District, make preliminary check of water loss in farm lateral ditch.**

Findings of survey teams will form the basis of "stop gap" water-saving measures which the irrigation district will establish under an expanded maintenance program.

Preliminary checks already indicate that one-half of the district's irrigation water is being lost somewhere along the course of the flow, between river and crops. Total average transmission water losses between diversion points and farm field taps are estimated at 30 percent.

Equally startling is the report of mounting water losses in farm irrigation systems. Farms are using, on an average, 5.56 acre-feet of water as contrasted to 3.5 to 4.0 acre-feet, the estimated field requirements of existing crops.

Most water conveyance systems serving the 755-farm area consist of open, unlined canals and laterals, constructed in fairly shallow soil over lava beds. The district is on short water rations at least 2 years in every decade.

The current water-saving development is planned to insure wider use of irrigation water to farm lands in the Redmond, Alfalfa, and Terrebone communities. Behind the plan of the cooperating agencies, too, is the prospect for expansion of new farm land and changing over dry-land farms to irrigation. There is also the aim of cutting water rental costs to the farmer. Irrigation leaders stamp the survey as one of the most important water-saving moves to be conducted in central Oregon.

**SWEETCLOVER IN 4-YEAR CYCLE.**—Sweetclover's part in the Latah and Nez Perce Soil Conservation Districts' current cereal-crop boom has farmers of that western Idaho grain center talking. High grain yields from farms using sweetclover is the rule. Harvests in the Genesee community gained an average of 20 percent in bushel production, following the use of sweetclover over fallow.

The generous praise farmers are heaping on the sturdy legume stamps it as one of Genesee's best soil-conservation practices. Higher crop yields from farms using sweetclover, along with other soil- and water-conservation measures, are reflected in the grain overflow from the

local elevators. Several tons of the grain were stored on the ground after harvest time last year. Pioneer residents recall that once before Main Street buzzed in anticipation of bumper crops and stepped-up income. That was when farmers changed over from horsepower to tractors.

Already the seeding of sweetclover, or sweetclover seeded with grass or alfalfa, has spread over one-seventh of the cropland in Genesee section. District cooperators describe the sweetclover tie-in with their conservation program as ideal for stopping soil losses, building organic matter, and aiding moisture penetration. Sweetclover also puts needed nitrogen back in the soil.

For years, seeding sweetclover with peas in a 5-year cropping cycle has been the backbone of farming around Genesee. Today, many farmers are getting better crop yields from seeding sweetclover with barley in a 4-year rotation.



**This field of Cornelius Sweeney, who farms near Genesee, Idaho, is seeded to sweetclover in alternate rows with barley.**

James M. Rabdau, in charge of the Genesee SCS office, who outlined the 4-year cycle to farmers, sums up its benefits in this way:

Says he, "We believe a 4-year cycle is best for Genesee ranchers because they are farming in an area of low soil fertility. The 5-year rotation draws too heavily on the land's nitrogen supply.

"But there are many other reasons why farmers should shorten their rotations. The 4-year cycle controls weeds better. If farmers are pasturing sweetclover, they can graze the first year's growth in the fall. Barley is cut higher than peas and leaves more sweetclover top growth for forage. Peas are cut close to the ground, leaving little for pasture. When sweetclover is cropped low, a portion of it is lost and the remaining stand weakened. Farmers won't get a good tonnage from it the next year."

The higher barley stubble gives better snow control on slopes in the Genesee area, where organic matter is low, Rabdau points out. Erosion is usually heavy on unprotected fields. Sweetclover, seeded with peas, isn't holding the soil too well. But, the higher sweetclover-barley stubble conserves snow and protects the land from freezing.



Rabdau points out that the 4-year cycle permits farmers to sow other crops, as desired, and thus keep up with changing grain markets. No matter what grain crops are grown with sweetclover, in either the 4- or 5-year cycle, cereal-crop ranchers stand to gain a high level of production.

Marion Holben, a 4-year-cycle rancher, harvested a ton of barley on pea ground that he seeded with sweetclover. His peas went better than a ton per acre, following wheat on sweetclover ground. His wheat, on sweetclover ground, went 48 bushels of Rex and 56 bushels of Orfed per acre. Holben hasn't burned his stubble for more than 5 years. He uses all of it. He fall disks his grain stubble, then follows up with a rotary subsoiler.

Adrian Nelson, also following a 4-year rotation, got 50 bushels of wheat on sweetclover ground. His peas on wheat stubble went better than a ton and his barley on pea ground went more than a ton. Stubble hasn't been burned on his farm in years.



Rennie at left,  
"Doc" at right.

**LEMON AID.**—The sagging citrus fruit crop of R. R. Rennie, Granada Hills, Calif., rancher, is on the rebound today because of a \$10 soil auger and a bit of know-how.

In moisture-thirsty San Fernando Valley citrus growers count heavily on irrigation water. The way they use it is the yardstick of their crop yields. The owners of many lemon, orange, and grapefruit orchards have learned the hard way that a water-laden field is not the key to bumper yields. The harvest records of many southern California orchards bear this out.

"We try to use just enough water to irrigate our ranches," explains a grower. "But it's easier said than done."

Rennie eyed his ebbing citrus box score uneasily a year ago. His lemon harvest dropped from 5,500 boxes in 1944 to 1,500. His orange and grapefruit crop skidded too.

Says Rennie, "I made the usual routine check of my orchard. Die-back was showing up more and more on my trees. I couldn't figure it out. Going over my furrow system, I found it in good working order. I was sure my trees were getting plenty of water."

Talking things over with his neighbors, Rennie learned they were in hot water, too. Whatever was wrong with

his trees seemed to hit the lemons hardest. The heavy fall of leaves in his lemon grove was not only a heart-breaker for Rennie, but downright embarrassing.

Rennie did what many San Fernando Valley ranchers are doing. He laid his orchard problems before directors of the San Fernando Soil Conservation District. Technicians of the Soil Conservation Service moved to give a helping hand early this year.

Using a water probe and soil auger, "Doc" Cureton checked the moisture at several points in the orchard. Tapping the soils here and there, he found Rennie was putting too much water on light soils and not enough on heavy soils. The handy irrigation tools, valued at \$10, showed the error.

"Rennie, you are watering too much and too often, and in the wrong places," "Doc" explained. "If you'll buy a soil auger and water probe, I'll show you how to use them. You can save your orchard."

Rennie became handy with the tools. It wasn't long till he was saving water daily. He has already saved \$104 in water rent on 28 acres. The gain from good water use has cheered Rennie to predict that his orchard will be back to normal in 3 years. Leaf fall is light now. Die-back is easing off. The 1948 pick stacked up as the best in 4 years.

Says Rennie, "It's easy now to tell when to irrigate and how much water to put on, thanks to the help I got from the Service. What do I think of my soil auger and water probe? They are the most important tools I've got. I found it the best \$10 I ever spent."

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## SOUTHWEST

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**THEY'LL KEEP CLOSE WATCH ON EROSION.**—A New Mexico soil conservation district may soon have the distinction of an addition where all the farmers bear the same name.

Cundiyo, a Spanish-American village and farming community in Santa Fe County, has a long-standing tradition that all families in the community must bear the name "Vigil." The farmers of this valley, "where everyone is named Vigil," have recently petitioned to join the Pojoaque Soil Conservation District, according to W. A. Williams, Jr., chairman of the board.

**PONDS POPULAR.**—Thousands of acres of range land in the 5,500,000-acre Uintah Basin Soil Conservation District in northeast Utah are being improved by new stock ponds



and spring developments, according to Howard M. Ivory, district conservationist for the Soil Conservation Service.

Ivory reports 144 new ponds built by ranchers co-operating with the district. These developments of well-spaced water supplies are enabling ranchers to make better use of their range because livestock can get to water without trampling vegetation and walking off weight.

Many ranchers are getting supplies of fresh fish and plenty of recreation as a result of stocking their ponds with fish.

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**ABSORBING IDEA.**—Blotters issued by the Bent Soil Conservation District, Colo., continue to create interest throughout the country.

Several months ago the Bent district began getting out a blotter for each 2-month period. The slick side of each issue carries a photograph of some local conservation scene, a calendar imprint for 2 months, a slogan or statement concerning soil conservation, and the district name and phone number in Las Animas.

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**KING COTTON QUENCHES THIRST.**—Fred Favor, a cotton farmer in the Agua Fria Soil Conservation District, Ariz., is saving at least one-third on water and is getting cotton yields 500 pounds higher than the average of the Salt River Valley. He attributes this to the conservation plan he is following on his 480-acre Maricopa County farm.

His water saving has come through the lining of 4 miles of irrigation laterals and field ditches which formerly lost about one-third of the water pumped from Favor's wells. The water saved would irrigate an additional 60 acres of land. Converted to dollars and cents, this could mean an increased income of as much as \$19,000. "If I'd lined the ditches 10 years sooner, I would be 20 years younger and quite a few dollars richer," Favor quips.

In addition to ditch lining, Favor also has leveled his land for uniform water distribution. This, plus rotation of alfalfa and cotton and the use of fertilizers, brings him a yield of 2 bales of cotton per acre—some 500 pounds higher than the average for the area.

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**FARM FIT FOR RACE.**—"Fitting a Farm for the Future" is the euphonious tag placed on the big farm remodeling show in the West Arapahoe Soil Conservation District, September 18, under sponsorship of *Western Farm Life* and radio station KOA, both of Denver.

The farm chosen for this show contained range, irrigated land, and dry farm land, making it ideal as a show window for nearly every western soil conservation practice. Land leveling, irrigation improvements, terracing, stubble mulching, stock tank building, and gully diversions were the main practices.

In addition to the farm and range conservation work, planned and supervised by the Soil Conservation Service, farmstead improvements were handled by the Colorado Extension Service. The farmer, John Race, received a veritable jackpot of assistance from equipment and machinery dealers and other firms interested in the advertising possibilities of the event.

**CONSERVATION CASH.**—Five Colorado soil conservation districts will receive \$500 cash awards in the first annual Soil Conservation Recognition Contest conducted by the *Denver Post* and radio station KLZ. The awards will be made in November.

Entries closed July 10 with 53 districts nominating three farms each, making a total of 159 farms entered in the competition. In conducting the contest, the State was divided into seven watershed areas. Regional judging was completed during July with six farms being selected to represent two districts in each of the seven watershed areas, making a total of 42 farms from which the State judging committee will select the five winners.

The office of each of the winning districts, in addition to the \$500 cash, will receive a plaque for display on which will be inscribed the names of the district officers and the names of the farmers whose outstanding activities in soil and water conservation brought honor to the districts. All winning farmers will receive framed scrolls extolling their leadership in soil conservation.

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**REMADE AND RETOLD.**—Arizona's first farm-in-a-day show, held in April, is still yielding results, according to word from the Oak Creek, Camp Verde, and Bridgeport Soil Conservation Districts, which sponsored the exhibition.

Supervisors and SCS personnel have been called on several times to take visitors over the farm that was remade in a day and the story was recently retold in the Sunday magazine section of the *Denver Post*.

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**LINING DITCHES.**—Construction of a reinforced concrete ditch to take water across gravelly bench land and to prevent heavy losses by seepage has been started by the North Canyon Irrigation Co. in cooperation with the East Juab Soil Conservation District at Nephi, Utah.

This 1,000-linear-foot ditch will carry 11 second-feet of water, or about 4,950 gallons a minute.

This is the second project launched by this company within the past 2 years to conserve irrigation water. About 1,800 linear feet of metal flume was installed along this same canal last year.

In the past there have been heavy losses of water by seepage along the stream channel when the water got low during the irrigation season. This resulted in very little or no water reaching the cropland when it was most needed. Since these improvements have been made, farmers report they are getting a fair-sized stream.

It is planned to concrete-line a portion of the irrigation ditch each year so that eventually all of the water coming to the mouth of the canyon will reach the farm land. The company figures that water thus saved will more than pay for lining the ditch.

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**MORE AND BETTER RANGE.**—"Proper clearing of undesirable sagebrush and the planting of western wheatgrass with yellow blossom sweetclover has increased the palatable range feed on my ranch by 500 percent," reports Paul Alire, a supervisor of the Lower Cebolla Soil Conservation District in Rio Arriba County, N. Mex.



"When the district was organized and began operations in 1944, there was considerable question as to whether sagebrush could be cleared profitably for the planting of improved grasses with clover," Alire recalls. "However, Soil Conservation Service technicians encouraged the early district cooperators to clear small tracts of sagebrush for grass plantings. Among those who adopted the program were Jose R. E. Martinez, H. C. Eubanks, G. C. Martinez, C. L. Jacobs, Hipolito Martinez, and myself. These ranchers, as well as myself, considered this a practical idea, but we did not expect the excellent results that have been obtained. Several tracts now are producing five times as much desirable pasture as did the sagebrush areas."

In view of the excellent results obtained, the district supervisors now are recommending that each ranch co-operator clear as much sagebrush from his land as is practical and plant pastures of improved grasses with clover.

Many sagebrush-infested ranches in this area now are producing at 20 percent of their capacity. "Money and effort spent in properly clearing sagebrush and planting improved grasses, along with proper range management, is a good investment," Alire holds. "The use of these conservation practices can make poor range land produce many times more good livestock feed annually."

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## NORTHERN GREAT PLAINS

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**FUN AND FOOD.**—Making "fishing holes" of farm and ranch ponds is more popular now than ever in the Northern Great Plains region—North and South Dakota, Nebraska, Kansas, Montana, and Wyoming.

This is because men and kids still love to fish, and these ponds are the only fishing holes in many parts of the area.

To date, SCS technicians have helped nearly 3,300 soil conservation district farmers in this area to make their ponds good places for fish; 1,735 were stocked last year.

Not all ponds are good for fish. Depth of water is more important than size of pond. The pond must be deep enough to allow for evaporation, seepage, and the use of water by livestock, and still leave enough to enable fish to live through all extremes of weather.

In the northern part of the Northern Great Plains, a pond should go into the winter with at least 10 feet of water. This requirement tapers off somewhat as one goes south. But as one goes south, the hot period gets longer. If the pond is shallow, the water will be warmed through. It must be deep enough for fish to have cool water. Anything less than 8 feet is risky.

The heavy silt deposits in many ponds are making them unfit for fish. Muddying the water is a drawback. Then

as the silt settles to the bottom, it reduces the depth of the water. In most cases, the water was none too deep to begin with.

Where SCS technicians help develop farm ponds, care is taken to prevent silting. Wherever possible, the runoff to fill a pond is taken from grassland. But where the water must come from cropland, it is cropland that is conservation farmed. The runoff has little, if any, silt. It flows slowly through a grassed waterway. Thus, the water is clean for both livestock and fish, and the depth of pond is maintained.

Other steps, also, are taken to improve the pond and its surroundings. It is found desirable to fence the pond and pipe the water for livestock to stock tanks when this can be done.

Planting grass, shrubs, and trees around the ponds has had several good results. This vegetation further safeguards the pond against silting. It also attracts birds and other wildlife. As the trees grow up, they tend to shade the pond.

Certain ponds developed this way have reached the stage so that when one is fishing he has the feeling that he is in the wilds. It is shady and cool, even during hot weather, and the fishing usually is good.

Even with the best of ponds, the ratio of game fish and the fish they feed on may become lopsided. When this happens, restocking is usually in order. Excess fish can be removed by seining, but it is far handier to be able to drain the water out and restock when the pond has filled again.

Experience shows that with proper management farm ponds can furnish lots of fun and food for many people.

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**SOUND BUSINESS.**—Eight years' experience with a partial conservation plan has reflected such good results that the Thompson Lumber Co. is now completing the plan for its farm near Vermillion, S. Dak., so that all land will be treated according to its needs.

This work is being done in cooperation with the Clay County Soil Conservation District.

The Thompson Lumber Co. farm has 240 acres. Part of it is upland along the Vermillion River and part is bottom land. Water erosion has been severe on the hill land and silting has caused much damage on the bottom. Production was low.

First work in conservation was done in 1939 and 1940 with the help of a CCC camp. Included were contour furrows on 20 acres of pasture, a 60-rod diversion terrace to protect bottom land, seeding of brome grass on 50 acres of rough land, and a farmstead windbreak.

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**RIVER CONFINED.**—Bringing 6 acres of brush-covered land into production and confining the Jocko River to one channel to check erosion have been accomplished by Bill Wilson near Dixon, Mont., as part of his conservation plan. He is in the Eastern Sanders County Soil Conservation District.

These 6 acres were cleared last fall with equipment rented from the district. This spring, the land was leveled for irrigation. The old river channels have been filled in and that land is also producing.



"Trees and brush were so thick that even grazing by livestock was impossible," Wilson said. "Now, 4 acres are being used for cultivation. It was seeded this spring to red clover with grain as a nurse crop.

"The other 2 acres have been seeded to Huntley mixture for irrigated pastures. And with the old river channels filled, that land is now being used for hay production and pasture."

Beside clearing and stream control work, Wilson has built a diversion ditch to protect his cropland from runoff from the hills. He also practices crop residue management, is improving his pastures, and has finished some drainage work.

**CANTANKEROUS CUTTING CHECKED.**—This is something a little different in the way of maintaining roadside ditches. It happened in Cloud County, Kans., alongside the Eldon Thorman farm near Aurora.

The road at this place goes down a rather steep grade to the bottom of a small valley. And so, of course, does the roadside ditch. The ditch gullied severely.

For a time, the rushing water was held in check with a set of "drops"—small dams of wood or concrete that are like stairs to let the water down—in the lower part of the ditch.

After a few years, though, the water cut around the drops and they had to be replaced. This was because too much water flowed down the ditch for them to handle. It was expensive. Early last year, it became apparent that the second set of drops must be replaced.

This time, County Engineer Clifford Palmquist called on the board of supervisors of the Cloud County Soil Conservation District for suggestions. Perhaps some of the water could be kept out of the ditch. Furthermore, Eldon Thorman was developing a conservation plan on his farm in cooperation with the district.

B. K. Geraghty, of the Soil Conservation Service, who had helped Thorman work out his conservation plan, looked the situation over. He suggested that a diversion terrace be constructed.

This terrace would take water out of the road ditch above the place where it was cutting and lead it across Thorman's land just above the farmyard, upstream to a place where it could be dumped with safety into the little creek that drains the valley.

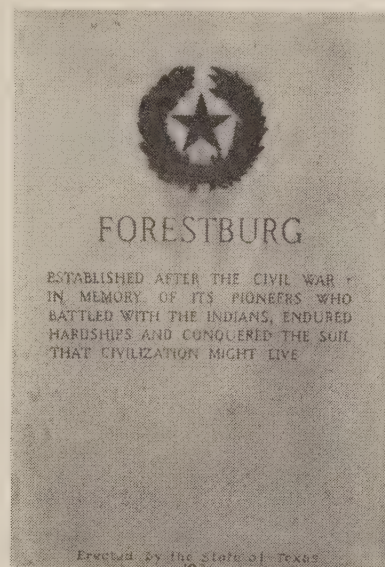
Thus, the water from the roadside would have to move slowly to the place where it could be disposed of with safety. At the same time, it would furnish Thorman with a diversion terrace he needed to keep runoff from the hill above from flowing through the farmyard, where it had caused some trouble.

Thorman granted an easement to the county for the diversion. The SCS technicians laid it out. The county engineer had it built with county equipment.

The ditch worked like a charm, according to all concerned. Thorman pointed out that the terrace wasn't overtopped once during last year's heavy rains. The county engineer points to the saving in cost in meeting the problem and to the permanent nature of the improvement.

All in all, with the water being brought under control, this shows that sometimes the longest way around is best.

## WESTERN GULF



**NATURE UNCONQUERED.**—In the little community of Forestburg in the Upper Trinity River watershed of Texas stands a stone memorial erected by the State in honor of the early settlers. It states:

### Forestburg

Established after the Civil War. In memory of its pioneers who battled with the Indians, endured hardships and conquered the soil that civilization might live.

The irony of this is that today Forestburg stands in the center of one of the most severely eroded countrysides of the United States. Gully and sheet erosion has washed away so much topsoil that many fields, no longer productive, have been idle for years. The population has decreased, once-fertile farms have been abandoned. Rural schools and churches are empty and falling into decay.

This is another example of the futility of trying to conquer the soil. Nature still remains undefeated. The pioneer settlers of Forestburg did their best. They helped to create a great State and a great Nation. They lacked the knowledge and the tools for conserving the soil through the proper treatment and use of the land. Were they alive today, it is reasonable to believe that instead of trying to conquer the soil, they would cooperate with Nature in trying to conserve it.

**FIGHTS EROSION AND RATTLESNAKES.**—Soil Conservationist Austin E. Klahn has learned how to throw a shovel like a spear or javelin. It's a useful skill, for Klahn works in a rattlesnake-infested area and his shovel throwing is a defensive act to save himself from a possibly fatal bite.

Klahn is in charge of the Land Utilization Projects in the Texas and Oklahoma Panhandles north of Dalhart. The projects consist of parcels of land that became so badly wind-eroded in the 1930 drought years that they were no longer productive. Idle and often abandoned, they were a continual threat to other land whenever the



wind blew. To protect the whole area, the government bought tracts of this wind-devastated land and turned them over to the Soil Conservation Service to control erosion and restore them to productive range.

Klahn lives with his wife and their daughters, Marie, 4, and Charlotte Ann, 1, at Land Utilization Projects headquarters. The place is miles from anywhere. Rattlesnakes are all around it. One has been found in the garage, another near Klahn's back porch. One day Klahn killed three of them in half an hour. Another time this year Klahn and three fellow workers, setting out poisoned bait for prairie dogs, killed 125 rattlers in one day.

Klahn has erected a snake-proof fence at his home to provide a safe play pen for his children. He has invested \$14 in a serum that he keeps in the family refrigerator for emergency use. He has trained his dog to bark a warning but to keep a safe distance from the vicious rattlers. For his own protection, he depends on his sharp eye and deadly accuracy with the shovel.

It's a treat to see Klahn fire his shovel. He stands off at a safe distance, takes careful aim, and lets fly. The shovel flies through the air like a jet-propelled spear or javelin, neatly slices the rattler's head off and plunges upright into the earth so that he can retrieve it without stooping over in the grass where other rattlers might be waiting.

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**IMPROVED PASTURE, MORE MILK.**—Quick cash dividends from soil conservation work have been obtained by B. Spears, operator of a dairy near Lake Charles, La.

With the aid of Eloi Primeaux, SCS technician working with the Gulf Coast Soil Conservation District, Spears planted Kobe lespedeza on a 75-acre pasture of Bermuda grass last April. Fertilized with 300 pounds of 0-14-7, the well-prepared seedbed quickly developed a fair stand of lespedeza despite a dry spring.

Two months after the planting, Spears turned 100 cows into the pasture. Within 4 days the cows were producing 30 gallons more milk and eating 100 pounds less feed a day than before going on the improved pasture. That all figures out to \$22 or 30 cents an acre daily. With favorable weather, Spears is counting on the grazing lasting until October 15. Improvement of the pasture cost \$16 an acre.

Spears is well pleased with the results, for he had come to the conclusion that it would be unprofitable because of high feed costs to continue to produce milk with grain and hay. He has limed another 75-acre pasture for a fall sowing of white Dutch clover and Dallis grass. In addition, he is spreading manure on a 70-acre pasture which will be improved soon with ryegrass. His aim is to get as close to year-round grazing as possible.

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**TEACHING THE BLIND.**—Over and over, David O. Davis, of the Fort Worth office of the Soil Conservation Service, has told the story of the soil, its use and abuse, its protection and improvement.

Recently, however, Davis was asked to talk to a garden club for the blind. Lantern slides, charts, and photographs were useless. He had to develop aids that the blind could "see."

"I was particularly bothered about those who were born blind," Davis said. "I called back the lady who had asked for the talk and explained. She reminded me that people who have been blind a long time develop other senses much more than folks who can see."

Davis gathered samples of soil—sand, silt, clay, loam, and samples of parent material, and went to the meeting.

The blind hostess welcomed him at the door. The tail of a seeing-eye dog thumped the floor. The club members smiled a greeting.

"I tried to talk strictly about things that could be touched, smelled, tasted, or heard," Davis related. "The audience helped by nodding and smiling. Then I made a point which the audience plainly didn't get. I realized that I had made this point by smiling and the audience didn't see me smile. I tried again. Another point failed to click, and I found I had tried to make an illustration with my hand. Again I backed up. Afterward when the audience gathered about the table to feel and smell the soil samples, I could tell by their remarks that they understood."

It was one instance, Davis said, in which a word—the right word—was worth a thousand pictures.

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## UPPER MISSISSIPPI

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**REFORMATORY MOVE.**—The Anamosa (Iowa) Journal reports: "Biggest single impetus to soil conservation in Jones County was approved by the State Board of Control in Des Moines.

"The 1,504 acres in the five State farms operated by the men's reformatory at Anamosa will go under a 100-percent soils conservation program.

"Board of Control approved conservation plans for the five State farms made by Oris H. Randolph, Jones County soils work unit conservationist. Plans were prepared by Randolph on recommendation of Warden Foss Davis and Verne E. Purcell, superintendent of the State farms at Anamosa."

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## SOUTHEAST

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**GAME WARDEN HELPS.**—S. T. Hogan, a supervisor of the Monroe Soil Conservation District in Kentucky, invited Oscar Bryant, the game warden, to attend a supervisor's meeting. Because of the lively interest aroused, the warden has helped stock 50 ponds with fish and seed 3,000 feet of field borders with sericea lespedeza. He has held several community meetings, demonstrating proper methods of stocking ponds and seeding field borders. The Soil Conservation Service supplies the warden with a list of farmers wanting this help.





**José Vicente-Chandler.**

**JOSÉ VISITS GEORGE.**—What does a Soil Conservation Service technician talk about when he's presented to the King of England?

You guessed it. The topic is soil conservation.

The King, by the way, is well informed on the subject, according to José Vicente-Chandler, work unit conservationist of Barranquitas, P. R. In fact, the King "stated categorically that he considered it one of the most important problems in the world today."

Vincente was one of a group of 10 athletes from Puerto Rico who went to England to compete in the Olympic games. After the games, he was selected to represent Puerto Rico at a reception given by the King and Queen at Buckingham Palace. He had the honor of being presented to the Royal Family and of holding what he describes as "a very short conversation" with the King. But short or not, it was long enough to get on the subject of soil conservation.

It was the first time Puerto Rico had participated in the Olympic Games. The Puerto Rican group competed in boxing, shooting, and track and field events. With very little experience in competitions of this sort, they felt lucky to score four points when their bantam weight boxer placed third in his division. More than a third of the countries did not score a single point. Vincente placed seventh in the pole vault. He tied at 13 feet with the U. S. National Champion, Morcum, who was awarded sixth place as he had taken a fewer number of vaults.

"My outstanding impression of the Olympics was that basically all people of the world are the same and can get along if they are just given the chance to know each other," Vincente says. "I met people from almost all the 62 nations which took part, and their aspirations and ideas were surprisingly similar."

What most impressed him about the agriculture of England, he said, was the almost complete absence of stream bank erosion.

"All the stream banks seemed to be built up and protected," he reports. "From what little I could see of English farms, it seemed to me that they manage their forests and pastures correctly and in most cases practice good land use."

Vincente, who is a graduate of the College of Agriculture at Mayaguez, has been with the SCS since April 1943, except for a period of service in the Army during the war. He has an outstanding record not only as an athlete, but as a farm planner. During the 14-month period ending June 30, 1948, he wrote 164 farm plans in the Torre-cillas and Sudeste Soil Conservation Districts. This is an average of 140 plans a year. During the same period, 23 percent of the planned practices were applied on these farms. Since these were 5-year plans, this represents virtually 100 percent application of the practices which were scheduled for that period.

In addition to his participation in the Olympics, Vincente, during the war, won the seventh Army pole-vaulting championship at Mannerheim, Germany, in July 1945; the European Theater of Operations championship (13 feet 2½ inches) at Nurnberg, and the International Invitation meet (13 feet) at Paris in September 1945. Competing for Puerto Rico at Barranquilla, Colombia, in December 1946, he won the Central American championship at 13 feet 1 inch, and at San Juan, Puerto Rico in April 1948, he set a new Latin American record of 13 feet 7 inches. This record has not yet been officially accepted by the Association.

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**PULPWOOD COMPANY AIDS DISTRICT.**—A pulpwood company operating in the Perdido River Soil Conservation District in Florida makes the services of their four foresters available without charge to assist SCS technicians in woodland management with small landowners. The company supplied district cooperators with 1,000,000 trees for planting during 1947. It is now establishing an 8-acre nursery, at a cost of \$10,000, to grow seedlings for district cooperators and other farmers.

A pulpwood company in the Richmond work unit of Georgia's Briar Creek Soil Conservation District helped get 750 acres of woodland marked and thinned properly. At the request of the SCS technician, this company furnished equipment and taught farmers how to mark the timber for selective cutting.

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**A LESSON LEARNED.**—Whenever Leonard Bender of Warren County, N. C., needed sand for concrete work, he used to go to a road ditch in front of R. H. Paschall's farm. But one day there was no sand there. Bender's curiosity was aroused. He found terracing, contour tillage, vegetated waterways, and improved cropping practices on the surrounding farm land. Erosion had been reduced to such a point that sand no longer accumulated in the road ditch.

Bender decided to investigate the situation on his own farm where crops had been planted without regard to the contour, with rows running across the terraces. He found that where rows crossed terraces, and at the lower ends of the fields, they had completely filled with sand.

"A lesson has been learned," said Bender. He forthwith made application for a conservation plan with the Fishing Creek Soil Conservation District. He is now putting the plan into effect as rapidly as the practices can be applied.



**TREE PLANTER SETS KUDZU.**—George B. Mock, chairman of the board of supervisors of the Flint River Soil Conservation District, Ga., interested Dougherty County commissioners in buying a tree-planting machine. Although the machine arrived late, 50,000 pine seedlings were set with it, at a cost of \$1 a thousand as the charge for the planter. Kudzu plants, also, were set with this planter faster, easier, and better than by any other known method. L. Vincent Davis, work unit conservationist, reports.

**DRAINAGE SPEEDED.**—Supervisors of the Hampton Soil Conservation District of South Carolina arranged with the Hampton County commissioners to buy and turn over to the district a dragline and a float for transporting it. The county also made available \$1,000 as a revolving fund, and furnished a truck and driver to move the dragline and a bulldozer from job to job. The county is to be repaid at a rate of \$4 for each hour the machine is operated. Proper drainage is badly needed and the Soil Conservation Service pioneered with the district in this field. Result: Ten miles of drainage canals excavated on seven cooperators' farms in the first 6 months the dragline was operated, at a cost to the cooperator of 15.5 cents a yard.

**DISTRICT DEMONSTRATIONS PLANNED.**—The plan of work for the Bolivar County Soil Conservation District in Mississippi, adopted by the commissioners in June 1948, provides for selecting a farm in each neighborhood to be used for demonstrating the objectives of the district program.

"After work has been started on these farms," the commissioners state, "future work, we hope, can be planned on a neighborhood groups basis, using the demonstration farms to the very best advantage. Community or neighborhood priorities of work will be determined on the basis of interest in conservation. . . . We plan to hold educational meetings in all neighborhoods while the demonstration farms are being planned so that as many farmers as possible can be acquainted with the objectives and plans of the district."

Similar plans are being carried out in some of the older Mississippi districts.

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## RESEARCH POINTERS

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Prepared by J. H. Stallings

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**GRADING SUGARCANE FIELDS.**—The cost of grading sugarcane fields to improve drainage has been reduced from about \$30 to \$9 per acre, reports I. L. Saveson, SCS research, Baton Rouge, La. At the same time, the increase in crop yield resulting from improved drainage was \$50 for "plant" cane and \$25 for first stubble cane. The cuts are graded, or crowned, so that the land slopes toward the lateral ditches on each side. The crowned areas are easier to cultivate and harvest, and can be worked after heavy rains when the ungraded areas are still too wet to work.

**ORGANIC MATTER AND SOIL AGGREGATION.**—The degree of subdivision of organic matter incorporated with soil has a very marked influence on the degree of aggregation produced, state T. C. Peele and O. W. Beale, SCS research, Clemson College, S. C. Crimson clover ground to pass a 0.5 mm. sieve was much more effective than similar material of 1-inch size in promoting aggregation.


**EROSION AND NAVIGATION.**—Eighty-five million cubic yards of sediment were deposited at the head of Chesapeake Bay between 1846 and 1938, claims L. C. Gottschalk, SCS research, Washington, D. C. The average depth of water over an area of 32 square miles was reduced by 2½ feet. Sedimentation caused the abandonment of many early American ports, as well as of dozens of once-great foreign ports.

Vast changes in rates of erosion brought about by man's deforestation and misuse of tributary watershed lands are contributing to the rapid siltation of harbors and waterways. Many of our major ports of today function only because of continuous and expensive dredging operations.

**PUBLIC WATER SUPPLIES.**—Soil erosion on the watersheds of public water supplies presents a most pressing problem, says Carl B. Brown, SCS research, Washington, D. C. A readjustment of land-use practices to reduce the wastage of farm lands resulting from accelerated erosion is needed. Although this appears to relate primarily to conservation of land resources, erosion greatly affects surface runoff, the regimen of streams, and finally all water uses. Soil erosion causes not only the siltation of reservoirs with resultant losses of storage capacity but pollution from soil erosion brings with it an added burden of water purification. This applies to both industrial and public water supplies and represents in the aggregate a serious economic loss to the public. Both of these erosion damages can be greatly reduced by the application of known methods of erosion control on farm lands.

**POTATO VINE LIFTERS.**—Vine lifters for use on tractors and sprayers, to prevent damaging potato vines at the time of cultivating and spraying were built and used successfully during the last season, notes Karol J. Kucinski, SCS research, Amherst, Mass. The lifters are simple and inexpensive to make. The main arms of the machine are made from ¾-inch round steel with ⅝-inch round steel being used for the hangers between the main arms of the lifters and the hydraulic lift. There is enough spring in the rods to make it possible for them to take considerable abuse due to irregularities in terrain. The vine lifter for the front tricycle wheel is suspended by clothesline, one end of which is tied to the hand-operated levers used in connection with cultivator attachment. The vine lifters for the tractor rear wheels are suspended from the arm usually carrying the cultivator and are operated hydraulically. The two vine lifters for the wheels of the spray rig are suspended from an arm which is operated by another lever which can be manipulated from the driver's seat by means of a cord. They are easily detached from the tractor at the end of the spraying operation.



An aerial photograph of a rural landscape. In the background, a small town is visible with several buildings, including two prominent churches with tall, pointed spires. The town is situated on a slight rise. In the foreground, a large, dark, textured field, possibly a forest or a field of tall grass, dominates the lower half of the image. A dirt road or path runs diagonally from the left towards the center of the field.

December  
1948

≡ SOIL CONSERVATION ≡

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UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.



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### WELLINGTON BRINK

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Art Work by

W. HOWARD MARTIN

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**NEW COOPERATORS TO GET MAGAZINE.**—Through the courtesy of local farm implement companies, every new cooperators of the St. Mary, Lafourche-Terrebonne, and Lower Delta Soil Conservation Districts in Louisiana will receive a year's subscription to SOIL CONSERVATION Magazine. The district supervisors made the arrangements for the gift, the equipment firms agreeing that the magazine would help each recipient to become a better conservation farmer. The supervisors will furnish the implement firms with the names of new cooperators every 6 months.

**GEORGIA CONSERVATION WEEK.**—A total of 38,280 persons actively participated in Conservation Week in Georgia through tours, meetings, motion-picture showings, and attendance at local churches where conservation sermons were preached, State Conservationist T. L. Asbury reports. In addition, 1,131 special articles, advertisements, and editorials on conservation appeared in local newspapers and 69 conservation radio programs were broadcast over 29 local stations. Special events included 84 farm tours with 3,743 persons participating; 161 meetings with attendance of 12,549; 100 motion-picture showings with audiences totaling 8,766, and conservation sermons in 92 local churches with congregations totaling 13,222.



**THE COVER.**—Conservation farming means prosperous villages and neat, well-kept churches. Here we catch a glimpse of the farm of Herschel Boyer, who cooperates with the Catocin Soil Conservation District. His plan was drawn in the fall of '47. Jefferson, Md., is in the background. Photographed by Hermann Postlethwaite.

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.



**At Denver Conference. Back:**  
**Jorge Leon, Fernando Suarez,**  
**Carlos Fynn, Guido C. Rando.**  
**Center: Horacio Betancourt,**  
**Luis de Armero, Manuel J.**  
**Chavez, Jose S. Juaregui,**  
**Gonzalo P. Andrade. Front:**  
**Jose A. Rugeles, William X**  
**Hull, Dr. Bennett, Lorenzo**  
**Patiño.**



By

**HUGH BENNETT**

## NATIONS WORKING TOGETHER

**A**T Denver, Colo., September 7 to 20, 1948, our entire Western Hemisphere family of Nations came together in a historic meeting: The Inter-American Conference on Conservation of Renewable Resources.

This Conference was remarkable in a number of ways. It was historic because it was the first international conference on the conservation of soil, water, and related resources. It was remarkable also because almost every conceivable aspect of the whole field of conservation having to do with land, water, vegetation, and animal life in relation to human welfare and world peace was brought out in frank discussion.

### A Scientific Conference

It was a scientific conference. The delegates very largely were scientists—specialists in the sciences of land, water, plants, animals, and in the social sciences. Discussion ran along lines of what these sciences could contribute toward the solution of the pressing problems of meeting the

food supply of our rapidly increasing populations. This was the central theme of the Conference.

And, finally, the discussions added up to a general recognition of hemispheric—and world—needs for getting under way immediately national programs for the conservation of soil, water, forests, and wildlife, including fish. There was general recognition, too, of the need for preserving scenic and recreational areas and native wilderness areas.

### A Conference of Good Will

The Denver Conference was the most harmonious and friendly international gathering I have ever attended. For a long time I have observed that wherever people work together, or discuss and plan together, for the protection and betterment of our agricultural land they are invariably drawn closer together than in any other kind of work or planning affecting the lives of people. I think this may be due to the fact that in a very meaningful sense productive land is the mother of every one of us on earth. This mother of all of us responds to kindly treatment with warm affection, giving us food, clothing, health, contentment, neighborliness, and peace.

This Conference at Denver probably will result in such widespread hemispheric goodwill, neighborliness, and helpfulness toward peace that the



effects may reach, beneficially, beyond the seas that separate us from other peoples.

### Let's Have More Such Conferences

I think—and sincerely hope—this is not the last, but the first meeting of the kind. I cast my vote for others—to be held in much the same environment and manner. And I propose further that *ways and means for keeping land productive* be the central theme. This would, of course, bring in again for full consideration not soil and water only but plants, animals, and recreational and scenic resources. Not only that, it would deal with these resources in both their separate and combined effects on our lives—on our economic and social welfare, our health, and our happiness.

Hold such conferences where indoor considerations can be appropriately intermingled with field trips to see and study the things we talk about, their practical application, and the wholesome effects that are being derived from them—just as we did at Denver.



Delegates inspecting highway erosion control.

### Field Trips

There were several field trips that proved interesting to all attending the Conference. A full day's trip was made by comfortable busses to the Arapaho and Pike National Forests to study forest management, grazing control, and forest-water relationships. A second full day's trip was through the Cherry Creek Soil Conservation District southeast of Denver. Here soil conservation problems and practices were shown as they are handled by farmers in a soil conservation district, with the technical assistance of the Soil Conservation Service. A third day was spent in the field observing the 1-day remaking of an eroded farm into a farm completely safeguarded with soil conservation measures. Then, also, a day was spent visiting the Rocky Mountain National Park and another day visiting the Big Thompson Irrigation and Power Project.

Visits also were made during the Conference to various laboratories and museums located in Denver.

### Declaration

For fitting emphasis and widespread distribution there is presented here the Declaration of Conservation Principles unanimously adopted by the Denver Conference.

As representatives of the governments of the Americas we have met to take counsel with one another about the wise use of the earth's resources. Our deliberations have been guided by our awareness of the gravity of the situation in which the peoples of the world now stand. Everywhere in the world natural resources have been depleted by ignorant and reckless exploitation that has ignored the inexorable natural laws which maintain them, and this depletion was disastrously accelerated by the recent world war. Throughout the world steadily increasing populations have put an ever-increasing strain on the dwindling resources. These two forces, each of which reenforces the other, have brought mankind to an almost critical point. The challenge of our time is that we must arrest and reverse them or face the fact that the very existence of civilization will be brought in peril.

In some areas millions of people must live below a tolerable level of subsistence, and nowhere in the world has a proper living standard been achieved for everyone. Moreover, mankind is oppressed by fear of further wars. Much of this fear originates in hunger and want, in which lie the seeds of disorder from which might come the wars we so greatly fear. We believe that on the road toward peace the only guarantee of peace is a careful development, utilization, and protection of renewable natural resources. We firmly believe that the earth is rich enough to insure a better living standard for everyone, provided that measures for such development, utilization, and protection are immediately adopted and adhered to by all from now on. We believe that, although our knowledge is incomplete, inexact and intermixed with error and misconception, nevertheless mankind now knows enough to devise effective measures and apply them with success. We believe that it is within our power to maintain civilization, to advance farther than we have now come toward the comfort and stability that are mankind's oldest dream, and to pass on to our successors an increased and strengthened natural heritage now being drained by our wastefulness. Finally, we recognize that in comparison to other parts of the world, the Americas have a greater natural endowment and have been less exhausted by war and exploitation. This good fortune lays on us a responsibility for leadership in meeting the challenge that we may by no means avoid or escape.

The crucial problem of our generation is to safeguard, maintain, develop, increase, and wisely use for the common benefit of mankind the natural resources of the earth.

During this Conference experts drawn from many disciplines of science and from many parts of the Western Hemisphere have analyzed this problem. In a spirit of the severest realism they have explored its complexity, pointed out the dangers we face, and discussed ways of meeting those dangers, correcting the errors that have been made, and avoiding errors hereafter. They have demonstrated that, precisely as hunger knows no frontier, so the crisis we face is common to us all, transcending national barriers and demanding a unified cooperation toward the final objective that must be as wide as the hemisphere. We all feel necessity's universal nature and our meeting today should be considered a demonstration of that feeling. The earnest desire for peace, which all men cherish, must point the way to wider cooperation of peoples toward a purpose beyond this hemisphere.



## Editor's Note on Conference Actions

The Conference adopted a resolution recommending "to the appropriate committee the name of Dr. Hugh H. Bennett as a candidate for the 1949 Nobel Peace Prize in recognition of the valuable services that he has rendered to humanity."

The Conference also passed a floor motion "extending to Dr. H. H. Bennett an invitation to visit and spend some time in each of the Latin American countries in order to advise and help them on their erosion and conservation problems."

The Conference granted a vote of applause to William X Hull in recognition of his work as Foreign Liaison Representative of the Soil Conservation Service for his efficient and sympathetic dealings with all Latin American countries and technicians.

Following the adoption of the declaration of principles, the Conference passed a resolution calling on the Pan American Union, working in close relationship with FAO, with other organizations of the U. N., and with the Inter-American Institute of Agricultural Sciences, to assume leadership in promoting cooperation among the governments of the Western Hemisphere in the development and conservation of renewable natural resources; in establishing a service to assist governments in obtaining scientific and technical advice; in aiding educational institutions to develop properly balanced curricula; and in encouraging the exchange of teachers, research workers, students, and trainees.

The Conference further recommended the creation of an Inter-American Conservation Society; the preparation of a glossary of ecological and conservation terms in Spanish, Portuguese, English, and French; that, if possible, it convert the exhibit of pictures and graphs which was of such great service in the presentation of conservation problems into a mobile unit with accompanying lectures; and that it create an annual prize to be called "Award of Merit for Efforts on Behalf of the Conservation of Natural Resources."

The catastrophe that threatens civilization results from man's failure to live in harmony with the principles that govern his environment. Man has abused the earth that is his principal source of wealth; and the earth therefore dispassionately makes his existence even more precarious and threatens him with extinction. Until he brings himself to live in harmony with nature there is no hope for peace or plenty or progress. We declare that, in order to establish a harmonious relationship between civilization and the environment in which it must exist, it is both our duty and our purpose:

To put an end to practices that injure or destroy the renewable natural resources.

To substitute for them practices that accord with nature's order.

To repair insofar as possible the damage already done to our renewable natural resources.

To increase the land's productivity by every means that science can devise and planning by private and governmental enterprise can effect.

To maintain and protect to the utmost all the renewable natural resources.

To safeguard and, as far as possible, to stimulate the land's natural ability, not only to maintain its productivity but to increase it in accordance with pertinent knowledge.

To bring about a proper equilibrium between populations and the productivity of their lands through the conservation and development of renewable natural re-

sources or other measures that careful study renders advisable.

To protect and conserve flora and fauna.

To protect and maintain natural zones of outstanding interest or scenic beauty.

To increase and disseminate among all people knowledge of the relationships between men and nature.

No generation can exclusively own the renewable resources by which it lives. Successive generations are but trustees charged with maintaining unimpaired the inheritance of their successors. We hold the common wealth in trust for posterity, and to lessen or destroy it is to commit treason against the future. The principal is the natural resources. The interest is the earth's ability to maintain their yield so long as natural relationships are preserved and so long as man will govern his activities and institutions to accord with them. No generation is free to spend more than the interest yielded by rational use of the heritage. On the contrary the duty of every generation is to apply its full knowledge to protect and increase the capital sum.

The problem implicit in our purpose is composed of many complex problems intricately bound together. It is so tremendous that it can be solved only by bringing to bear on it all the instruments of scientific and social knowledge and all the skills of politics. The many specialties of the physical and biological sciences must be focused on it, together with the many techniques of engineering. But these are not enough. Conservation requires the coordinated assistance of all branches of knowledge that deal with peoples and their institutions. Economics, sociology, psychology, anthropology—all these and many other disciplines must guide us in the application of what the basic sciences have shown to be desirable. It is no longer possible to approach this problem from a simplistic standpoint. The approach must be many-sided, utilizing our entire heritage of knowledge in a coordinated effort.

Implicit in our purpose is the constant augmentation of knowledge. Conservation requires continuous advance in our understanding of nature. It requires continually increasing effectiveness in the techniques of working with nature. Research must underwrite our hope. It must be enormously extended and provision must be made for it at every facet of our problem. Moreover, time is short and researchers are scattered, not always in communication with one another, not always able to call on one another for help or information. They must be given ways of coordinating their researches, of helping one another with common problems, of avoiding the waste of duplicated or mistaken effort. Clearing centers of conservation knowledge must be provided or expanded, and the exchange of information among those who study these problems in the various countries must be intensified.

Implicit also is a much more comprehensive program than any now existent for the training of technicians, especially of those who work most directly with the land itself and with the people who get their living from it.

Ultimately, however, conservation rests on the individual's knowledge of the ends it envisages. We depend upon one another and the man who lives and works in a metropolis without ever seeing the fields that produce his food should be as concerned about those ends as the man who cultivates the fields. In his turn, the farmer is under obligation not to impair the land that produces the city's food. Everyone must be able to recognize harmful practices in the treatment of resources and must adopt the procedures that will prevent them. The end in view is that people everywhere will understand that their dependence on the earth lays on them the obligation of respecting the earth and of protecting it in order that they may enjoy its fullness. Toward this end it is the duty of governments and their agencies, of religious institutions, of public and private foundations, of universities and colleges and schools, the press, radio and motion pic-

(Continued on page 104)



# DISTRICT PROFILE

ALFRED  
WIGER  
—  
Minnesotan

I have always been inspired by the bigness of the Red River Valley of the North—its broad expanse of fertile, level lands, large farms, and friendly, hard-working people. To me it is one of the most unique agricultural areas in the world.

The future possibility for greater production is unlimited, but to bring this about the Valley needs such soil and water conservation practices as proper land use, tillage, drainage, rotations, tree planting, and many others.

One of the first men to recognize this need for conservation was Alfred Wiger, who owns and operates a farm of 690 acres 2 miles northwest of Ulen, Minn. Wiger, a robust, genial man of boundless energy, is known as "the daddy of the soil conservation movement in the Valley." He is chairman of the East Agassiz Soil Conservation District, vice chairman of the Minnesota Association of District Supervisors and a director of the National Association of District Supervisors.

Wiger's parents came to the Valley in 1870 from Wisconsin. Alfred was born and raised on his father's homestead near Ulen. He graduated from the Northwest School of Agriculture at Crookston, Minn., in 1918 and started farming the home place in 1919.

While attending school at Crookston, Alfred walked 11 miles on week ends to court the future Mrs. Wiger, a lovely girl from Norman County, then teaching school in the vicinity. During the summer he drove a spanking team of bay and roan ponies and a shiny, new buggy 30 miles to see her.

The Wiger family includes a daughter and two fine sons. The daughter, Mrs. Orville Anderson, lives on a farm near Ulen. The boys, Julien and Conrad, like their father, are graduates of the Northwest School of Agriculture at Crookston. Julien, the older, is a Navy veteran and Conrad is attending Luther College at Decorah, Iowa.

Wiger's farm plan with the East Agassiz Soil Conservation District provides for proper land use, soil building, wind erosion control, drainage, wildlife, and woodland management. There are

111 acres in clean-tilled crops such as corn and potatoes; 161 acres in small grain; 112 acres in sweet-clover used for hay, seed, or pasture; 98 acres in perennial grass and legume hay (alfalfa-brome); 79 acres in permanent pasture; 109 acres set aside for woodland and wildlife; and 18 acres allocated to buildings and roads.

Rotation and field lay-out provide alternate strips for wind erosion control. More than a third of the cropland is in soil-conserving crops. Live-stock averages 26 head of dairy cattle, 7 horses, 30 ewes, 20 lambs, 5 brood sows, and about 400 chickens.

Wiger believes in trees. Three miles of field windbreak have been planted—about 14 acres—and in addition 80 acres are maintained in protected natural woods along the creek. Wildlife has not been forgotten. Beavers, unmolested, have built a dam in a natural coulee and impounded water for a distance of half a mile.

Mrs. Wiger is an active partner on the farm. Through her cooperation and adeptness, Wiger is enabled to devote time to off-the-farm activities, including his work on soil and water conservation.

—ROY E. BENNETT.

## WIGERS AT HOME.

**Top, reading across:** Mrs. Wiger checks over garden; Wiger dusts potatoes in wind strip; it takes two to make a team.

**Second row:** Intermission from haying, as Mrs. Wiger brings out afternoon lunch; the two boys help with the stacking.

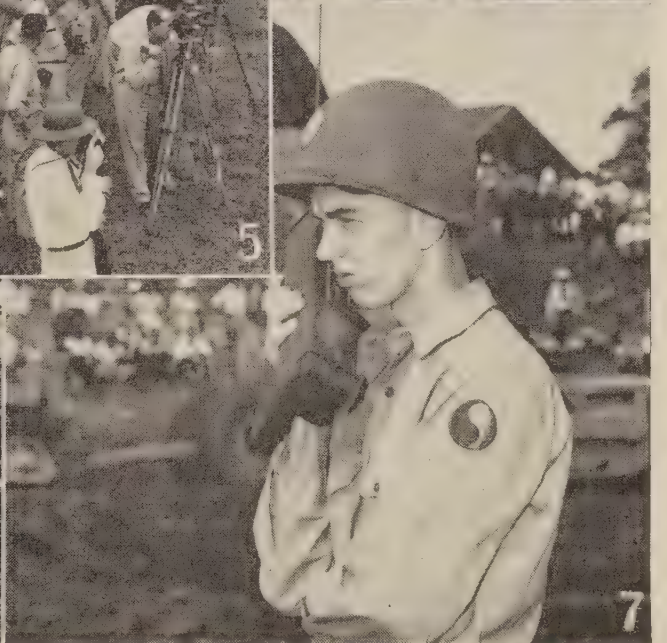
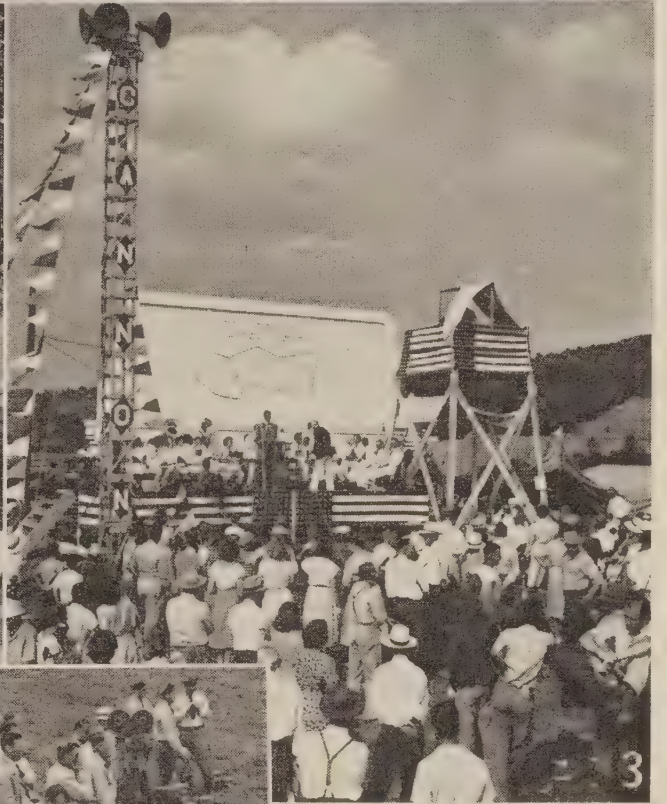
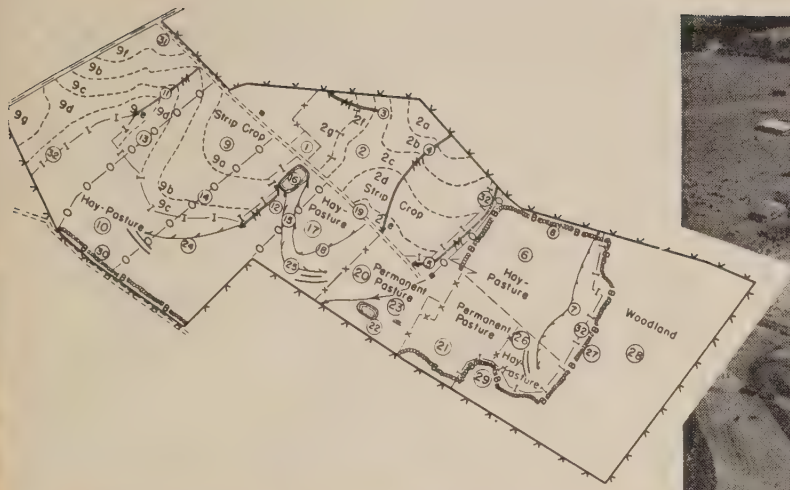
**Third row:** Barley is well liked; more bug-discouraging operations; Wiger prepares to haul some of his bluegrass "Junegrass" strippings to market.

**Bottom:** Field windbreak and strip cropping for wind-erosion control.

**GOOD "NEWS."**—The New Mexico Association of Soil Conservation Districts, organized in April 1948, has launched a quarterly publication they call *New Mexico Conservation News*, which they publish in cooperation with the State Soil Conservation Committee.

The first issue gave a cross section of National, State, and local conservation activities in readable and highly informative form. John S. Young of Cuba, Cuba Soil Conservation District, is the president of the association. Noel McDade of Clayton, Northeastern Soil Conservation District, is vice president, and Mrs. Evelyn Kethley of Serafina, Gallinas-Tecolote Soil Conservation District is secretary-treasurer.







# OUR STAKE IN LAND PRICES

By A. M. HEDGE

**L**AND prices are high. Whether they are too high or not remains to be seen. I am not a prophet and do not pretend to know what will happen in the future. This seems like a good time, though, for conservationists to take a look at what has happened before.

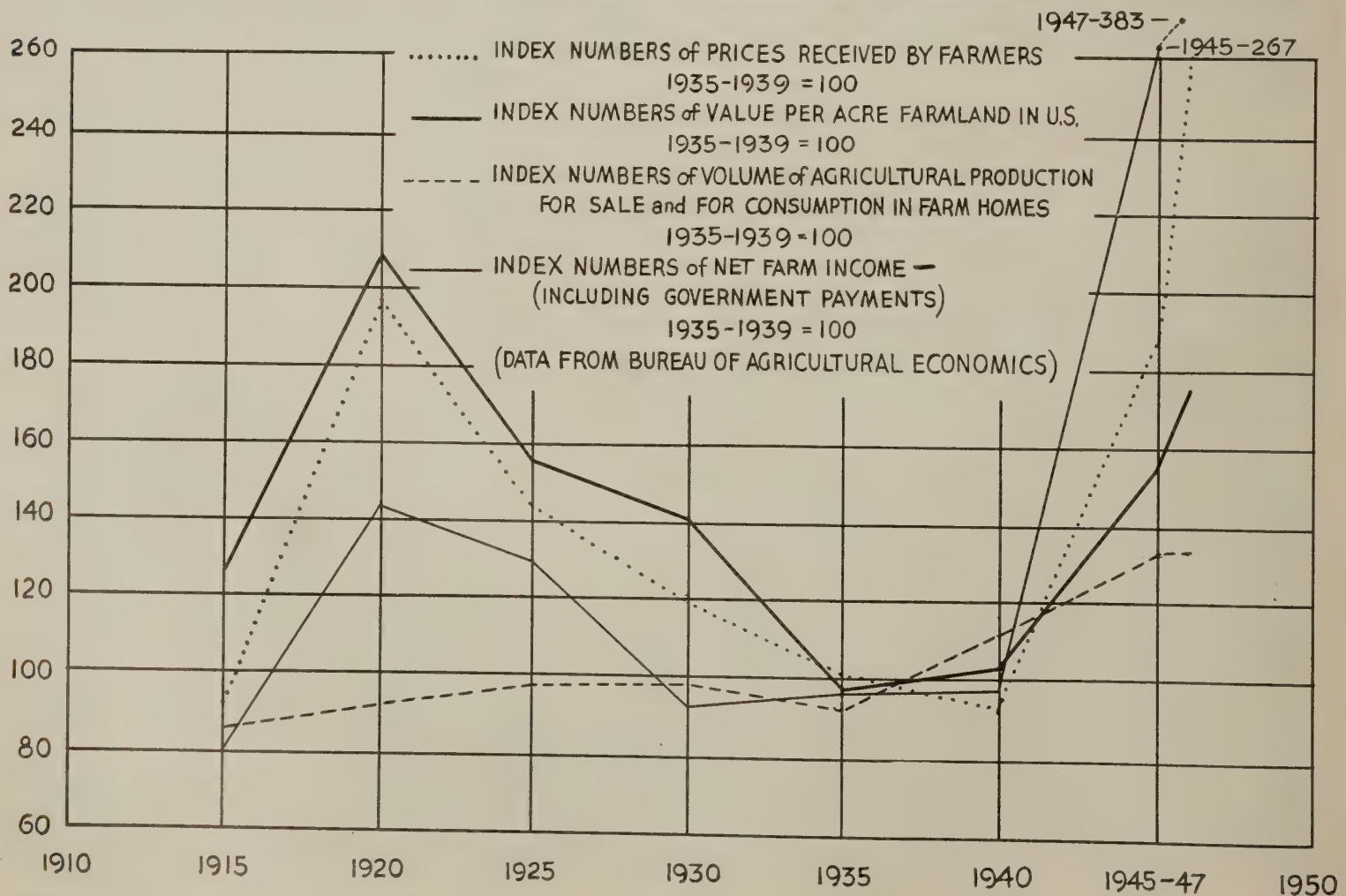
History shows that when net farm incomes are low and farmers are hard pressed to meet living expenses and keep up mortgage payments, farm land is likely to be exploited instead of conserved. At present, conditions are exactly the reverse. Although land prices are nearly as high as they were in 1920, prices received by farmers and net farm income are the highest in history. That means farmers have more money to pay for improving and conserving their land than ever before. That may be one reason so many farmers are practicing conservation. It's a good time to do that. Land that is built up now and permanently protected against erosion will continue to produce abundantly and should not decline in value so much as land that has been abused.

Experiment station tests show that returns on money spent to improve land and buildings are approximately three times as great as returns on similar amounts of money invested in additional land.

According to E. L. Sauer, research data from 10 years of records on high- and low-conservation farms in McLean County, Ill., show that high-conservation farms had sufficiently higher incomes to give them an earned value for their land of approximately \$60 per acre more than that of low-conservation farms. The high-conservation farms are those that have applied most of the conservation needed. The low-conservation farms are those that are meeting only a small percent of their conservation needs.

Some people are inclined to say that land values today are not too high in respect to farmers' ability to pay. If we could be sure that prices farmers receive and net farm income would stay at the present high levels, land values could go up even

NOTE.—The author is chief, project plans division, Soil Conservation Service, Washington, D. C.





more and not be out of line. But that little word "if" is significant. Reference to the accompanying chart will show what I mean. Figures on land values, prices received by farmers, net agricultural income, and volume of agricultural production have been plotted for the period 1915 to 1947. You will notice that the two factors most closely related to land values were net income and prices received. As those two factors went up or down, so did the value of land. Look at what happened between 1920 and 1935. During that period, land prices skidded steadily down. But it was not until 1934 that they were able to get below the prices received and it took until 1935 for them to catch up with net income in their dizzy descent. Land prices were definitely out of line with farmers' ability to pay them during that period. As a result, many good farms were lost by their owners and many others were ruthlessly exploited so that they might not be lost.

Since 1940 we have had almost a complete reversal of the conditions that prevailed between 1920 and 1935. During most of this 7-year period the index of land values has been well below the index of net incomes and prices received. During this period many farmers have paid off their mortgages or reduced them so greatly they will no longer be burdensome. That is good.

How long will these favorable conditions last? I don't know, but when prices received and net incomes do fall from their present lofty perch, they are likely to fall fast and hard. If history repeats, land values probably will be dragged down too. It would seem wise, therefore, to keep mortgage debts low enough to pay them off without having to abuse the land when less favorable conditions of income arise.

There are many things in the present unsettled condition that could cause a drop in prices and in net incomes. Government price supports, the number of people with jobs, wage levels, demands from foreign countries, weather, and population increases all will exert an important influence on the farming situation.

When and if prices received by farmers take a tumble, it is likely that net incomes will fall even faster. Farming expenses usually do not drop so fast as the prices of farm produce. Indeed, many farmers will probably never again be able to reduce their cash operating expenses to former levels. Where farm power formerly came from horses and mules that were fed on grain grown

on the farm, the gasoline truck now delivers the power and leaves a bill that must be paid in cash. Such commonly accepted operating expenses as monthly electric bills, milk pick-up, custom fees for equipment operations and many others did not draw on the farmer's bank account a generation ago. That does not mean that mechanization and electrification are bad. I am not one who wishes to return to "the good old days." I am merely pointing out how necessary and desirable cash expenses have gone up on many American farms. To meet them requires that present-day farm operations must be oiled up by relatively high yields and high prices. If the oil can is allowed to leak, trouble is ahead. There is every reason to expect yields to go even higher than now. Modern conservation methods, increased supplies of limestone and fertilizer, new and improved strains of seed and livestock, more and better farm equipment, all add up to higher production. But what about prices? All I know is that history says they have got to stay relatively high or American farmers will be traveling a rough road.

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## NATIONS WORKING TOGETHER

*(Continued from page 104)*

**Peru**, Luis G. de Armero, Chief, Division of Soils and Fertilizers, Ministry of Agriculture;

**Uruguay**, Carlos A. Fynn, Chief, Department of Classification and Conservation of Soils, Ministry of Agriculture and Livestock;

**Venezuela**, Miguel Parra Penzini, Chief, Division of Soil Conservation, Ministry of Agriculture and Livestock, and Jose Antonio Rugeles, Agricultural Technician, Council for Rural Welfare, Ministry of Agriculture.

### Technical Advisers

**Brazil**, Guido Cesar Rando, Agricultural Engineer, Erosion Control Division, Department of Irrigation, San Paulo;

**Colombia**, Horacio Betancourt Velez, Technical Adviser to Delegate from Colombia, Guillermo Ramirez Romero, Dean, College of Agriculture, Palmira, and Fernando Suarez de Castro, Agricultural Engineer, Federation of Coffee Growers;

**Costa Rica**, Jorge Leon, Resident Associate, Inter-American Institute of Agricultural Sciences;

**Mexico**, Gonzalo Andrade Alcocer, Assistant Agricultural Attaché.

Most of these men completed their work with the Soil Conservation Service from 2 to 6 years ago. The Service is especially proud of the fact that these men were selected to represent their countries at this Conference. It is also very proud of the records that have been made by all the men from foreign lands who have trained with the Service. One of the trainees, a delegate, said, "The realization has come that soil conservation is a world-wide problem and that all countries must work together for the solution. In view of the rapidly increasing populations, depletion of the productive soil of all countries must be checked if the people are to survive. This soil conservation training is doing much to improve the agriculture of the world."





Deer Creek after the flood held large deposits of sterile sand.

## A FLOOD CAME

By LESTER C. FOX

**S**ELDOM is the final chapter of a flood story written. There is more to the story, though, than the earlier narrative of belting downpours, violent winds, flooded streams, blocked highways, ruined buildings, death, and heroism. In the case of Hydro, Okla., and its nightmarish flood of June 22, 1948, there's much more to be told.

The last part of the story is not so spectacular as the earlier chapters. In many respects, however, it is more important, for it will affect many people for a long time to come. It concerns what happened to crops and the soil they grew in and how the damage done to the land may affect the lives of those who will go on trying to farm it. Communities dependent upon them are concerned too.

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NOTE.—The writer is an information specialist, Soil Conservation Service, Fort Worth, Tex.

This part of the story has been gathered by men who are directly interested—men of the Soil Conservation Service. Throughout the flood sections they made studies in the wake of the receding water.

The technicians found that in the area around Hydro alone the 15- to 20-inch rain washed away more than 15,000,000 tons of topsoil. That's equal to more than 100 quarter-section farms with a 6-inch layer of topsoil. At \$100 an acre, that's a loss of more than \$1,600,000.

In the small 5,120-acre flood plain of Deer Creek, crop loss amounted to \$240,000. It will take more than \$100,000 to put that land back into shape for another crop.

For the State as a whole, farm lands lost at least 133,610,800 tons of topsoil. That's the equivalent of a thousand 160-acre farms worth around \$16,000,000. That soil washed down onto rich bottomlands where it smothered crops and piled up as sterile sand, and into stream channels where it makes the next flood come sooner because it occupies space intended for water.



A money value, however, cannot be put on top-soil because it cannot be replaced. Other damage can be figured. For the State it runs to at least \$21,000,000. This figure includes damage to crops, farm buildings and equipment, roads and highways, bridges, railroad tracks, and livestock.

Mansel G. Armstrong, supervisor of the North Caddo County Soil Conservation District, who owns a 520-acre farm 1½ miles southwest of Hydro and operates an adjoining 160 acres which he rents, figures his loss at \$7,000—about \$5,000 in damage to crops, and the rest to home, farm buildings and equipment.

Before the rain Armstrong had two deep farm ponds. Afterward, he had none. Both ponds were filled with silt washed down from a farm on which there were no conservation measures. "The trouble is that the surface soil now is sand which blows in the slightest breeze," he says.

The quarter-section Armstrong rents had no conservation program. He had 118 acres in wheat, the rest in grass.

"The wheat was already cut when the rain came," says Armstrong. "I thought I was the smartest farmer in the county because I was the first to get my wheat stubble plowed under. When the rain came, the soil was bare. A lot of soil was washed away from that plowed area. In some places it was washed down to the plow marks, a depth of 7½ inches. The part in grass lost no soil."

Marshall Felton, who farms 610 acres 3 miles northeast of Hydro, figured his loss at \$3,500 in ruined crops and damaged property. One of many farmers who checked the rainfall in various containers around their places, Felton measured 20 inches of rain in a metal stock tank after the storm.

Rain churned natural drains in a 320-acre pasture into gullies. "No one figured on a rain like that," Felton said. "That pasture was never hurt before. Now I can't put my cattle in it."

Furrow-deep silt ruined 25 acres of cotton in a contoured and terraced field. Built only last spring, the terraces had not settled enough to withstand the downpour. "They just melted," Felton said. He did not replant the field; he's going to plant it to wheat this fall. Meanwhile, he has rebuilt the terraces.

Felton had harvested 200 acres of wheat before the storm, had 200 unharvested. He got only 8 or 9 bushels of hail- and rain-damaged wheat per acre after the storm. He had made 34½ bushels

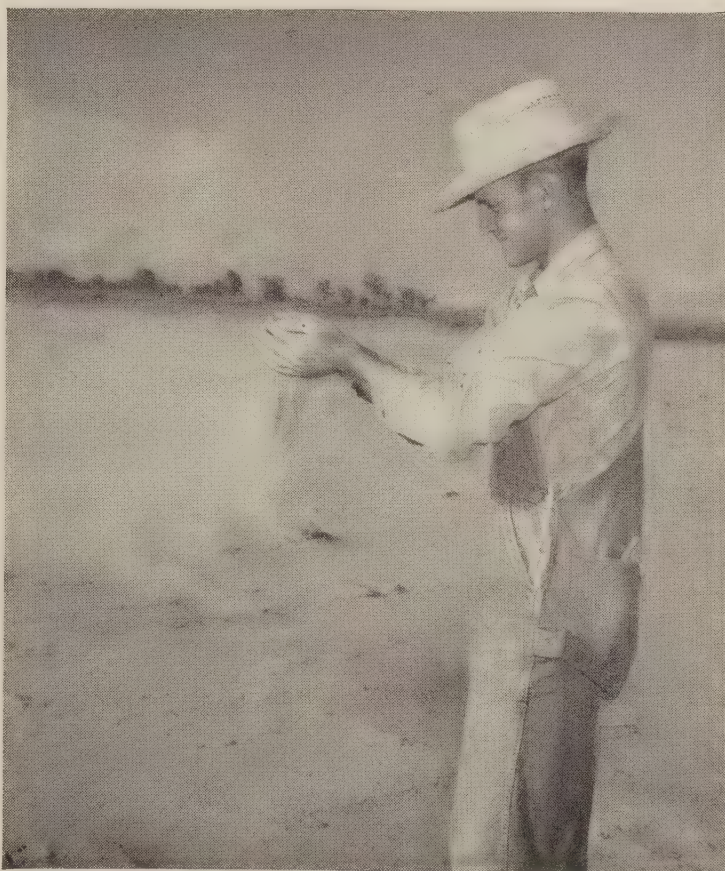
per acre on parts of the farm earlier. He plowed under 40 acres of barley and 27 acres of oats, both crops too badly damaged to be worth harvesting.

Felton's father, Roy M. Felton, an early settler of the area and cashier of the First National Bank of Hydro, said the only comparable rain in his experience occurred in 1908 when a standard gage in his bank measured 8½ inches. "Northwest of Hydro it rained about 12 inches at that time," he recalled. "But there was not nearly so much damage then—the land was new and the creeks took better care of the runoff."

On June 22 the rain started about 4 p. m. but did not come down hard until about 6 o'clock, Banker Felton said. When he returned to the bank at 8:30 that night, the rain gage was running over. It measured up to 9½ inches.

The silt deposited by the flood waters has created the new problem of wind erosion for many farmers. William J. Troxel, who farms 320 acres 3 miles east of Weatherford, is one of them.

Troxel had 60 acres in cotton and grain sorghum. The rain washed off layers of soil and deposited the silt in the lower part of the sloping field. Troxel replanted the 60 acres to sorghum and cowpeas but less than a month after the flood,



William J. Troxel sifts a handful of sand through his fingers to show how easily it blows. This farm has now become distinctly air-minded. The furrows you see are practically level.



the wind was ripping the soil from that part of the field. Furrows were filling up with sand. "I never before had any wind erosion in that part of the farm," Troxel says.

"Contoured furrows on a 20-acre field of unharvested wheat helped some but not much, because my supporting terraces were not finished and they gave way. I've got my terrace system finished on 65 acres now. I figure I lost an inch of topsoil on that 20 acres. Now I've got to get organic matter back in the soil to keep it from blowing and to bring its fertility back up again."

Deer Creek overflowed Terry G. McCarty's quarter-section bottomland farm 3 miles west of Hydro to a depth of 3 feet inside his home. McCarty totted up his loss at \$3,000 to \$4,000 in ruined furniture, stored oats, and baled alfalfa that washed away; in damaged equipment, buildings and 1,100 bales of piled hay from which a new shed of aluminum and galvanized iron blew away.

"I didn't lose any soil to speak of," McCarty states, "but 3 acres were ruined by a heavy deposit of silt washed down from my farm road and pasture above." The silt piled up in places almost fence high. The sloping pasture is composed of inferior grasses, weeds, and brush which do not hold runoff in check so well as the better forage plants.

Although it was a comparatively well sheltered bottomland farm, the deposited silt created a wind erosion hazard. Within a month after the flood, soil was blowing as McCarty prepared a field for the next crop.

John B. Nix, youthful farmer who has a 160-acre place 6 miles southeast of Weatherford and operates an additional 60 acres up above, lost all his crops except wheat which he had harvested a few days before the storm. He also lost 120 pullets and 40 to 50 hens. His barn collapsed and blew away. His brooder, chicken houses, and granary were demolished. Shingles blew off his house. His garage was moved from its foundation and his house was twisted 3 inches off plumb. He immediately replanted his crops and began repairing the property. He said:

"Right now I see damage of about \$5,000. And by being a month late, the crops may be a total loss. If weather is favorable, however, they may come out all right."

Nix had plowed under 4 or 5 acres of wheat stubble when the storm broke. "That plowed part

was a mess. It washed down to the plow marks. But it didn't wash enough to hurt anything where the stubble was. There it just silted some from soil washed down from the farm above."

Nix had his cropland terraced last spring. New and not yet settled, all the terraces broke in places but, even so, they helped a bit. One terrace built on the rented 60 acres 2 years ago held, but those terraces above and below it, built last spring, gave way in places.

Nix estimated the rainfall on his place at 18 inches. That's 62 percent of the average rainfall.

E. H. Strauser, who farms 320 acres 4½ miles southwest of Weatherford said he lost only a minimum of soil. The heavy rain did practically no damage as it was carried off safely from a sloping, contoured and terraced 16-acre field in wheat stubble. Several acres of pasture, however, were damaged by silt washed down from two neighboring farms.

It's going to take time for some farmers to recover from that flood. It will be an uphill fight, for where topsoil loss was serious, crop yields will be lower until the land can be put into top condition again.

The soils investigators summarized their findings in a report to regional headquarters in Fort Worth:

1. Soil loss was kept to a minimum by an adequate cover of vegetation such as grass, grain stubble, or other crop residue.

2. While many mechanical structures gave way under the impact of a rain they were not intended to combat, they helped to reduce soil loss. Such structures included terraces and farm ponds.

3. Mechanical structures are of maximum benefit when they are used to support conservation practices involving vegetation.

4. Greatest damage to soil was done on cultivated areas having neither vegetative nor mechanical protection.

5. Accumulations of silt here and there created a new problem of wind erosion.

"There was one heartening factor," said Louis P. Merrill, regional conservator of the United States Soil Conservation Service. "It was proved that the land can be protected by a program of coordinating soil conservation practices even in an exceptionally heavy rainfall. In some areas 16 to 20 inches of rain pelted the soil in 8 hours. Yet, where there were integrating soil conservation practices on the land, soil losses were comparatively





Here had been a stock pond on the Mansel G. Armstrong farm. Like another pond on the farm, it is now filled with silt washed from a neighboring farm. Water was 8 feet deep where the tree stands.

slight, in some cases negligible. That was especially true of the vegetative phases of the soil con-

servation program. Where there was a good cover of grass or stubble, the soil washed very little."

**CALIFORNIA ZIGZAGS.**—A patchwork of 50,000 acres of contour strip cropping is helping refill the understocked well springs of southern California's big Antelope Valley Soil Conservation District.

Such details as soil types, degree of slopes, and amount of erosion all enter into planning the strips, which farmers say afford perfect protection from heavy storms. Much of the rain and runoff water, caught in the coarser soils fringing the upper edge of the valley, sink in and percolate down to bolster underground basins. Without the strips, water reaching the valley floor or running into the dry lakes would evaporate.

Seventy farmers are using from 160 to 10,000 acres of strips on dry farmed grainland now. Another 15,000 acres of water or wind control strips are on the district's future work calendar. Wind strips worked out so well as buffers against this year's big blow that farmers have put in an additional 5,000 acres.

Antelope district cooperators like the way the strips are pulling their grain crops through the dry 1948 months. Some of them would have faced crop failures without them. The strips conserved last year's rainfall and also stored up the 6 to 7 inches that fell up to midsummer.



The Ritter Brothers ranch is one of the largest users of strip cropping in the Antelope Valley Soil Conservation District.



# New Things

## on the AGRICULTURAL LANDS of America



Chief Bennett inspects Jones Creek watershed, Monona County, Iowa. The soil conservation work was completed over this entire watershed several years ago. Overgrazed slopes have been regressed and some of the deeper gullied lands have been clothed with trees. At one critical point a water detention dam was installed. Prior to this work, Jones Creek watershed had violent floods and every heavy rain poured destructive loads of silt over the rich valley lands below. The conservation work done by the Service has stopped the erosion nearly 100 percent. It has stopped siltation almost 100 percent and it has reduced the flood flow by 75 percent, according to best estimates.

By HUGH BENNETT

**T**HERE are good reasons to be encouraged about our American land. Not satisfied—encouraged. Here are a few 1948 glimpses at some of the things I saw going on.

First, at mid-August, the corn crop through Ohio, Indiana, Illinois, Iowa, South Dakota, Nebraska, Oklahoma, and Texas was the best looking corn crop I ever saw. Dark green everywhere except on thinly eroded slopes; uniformly developed and very heavily fruited. On tens of thousands of acres I saw corn that will yield 50 to 100 bushels, plus. It's a record crop that speaks well for the 1948 brand of American agriculture and well-tended land.

Then, too, everywhere I saw the plains the picture was almost uninterruptedly green. South Dakota, for example, was that way from the Black Hills to Iowa, except in the badlands and the yellow stubble of wheat fields. Green grass, green corn—all in violent contrast to the drought-seared landscape and dust-dimmed fields I saw while crossing the State as a member of the Drought Committee in 1936. Instead of ailing land and discouraged people, I saw this year people beaming proudly over their wonderful yields. Thirty bushels of wheat per acre, forty bushels, even more in some fields, and "more grass than all the animals of the State can eat!" Money in the pocket, too! Everybody's well off, apparently, tenant farmers and all!





Looking upstream in the Nepper watershed at a completed fill and outlet flume of a gully control structure that was installed on a local county road. The banks of the gully, which was 38 feet deep, below this road, have been sloped and seeded.

That kind of situation makes people feel good.

### L. U. Land

I drove over great stretches of "L. U." land, purchased by the Government a decade previously as "submarginal" land. Much or most of this was producing little or nothing when it was bought, and much of it was tax delinquent. One large block had paid no taxes on 76 percent of its extent

for more than four consecutive years. The land was eroding when it was bought; much of the rain-water ran away as so much waste, cutting out new gullies and enlarging old ones. There was little grass. People on the land were discouraged.

When the land was bought, improvements were started by the Soil Conservation Service—that is, when the program was turned over to the Service. Fencing, adjustment of livestock numbers to the



Looking downstream, Theobald watershed, from the top of a partially completed drop inlet structure into the channel below. Chief Bennett is pointing out practices on the crop land involving terracing and contour cultivation of corn.



carrying capacity of the range, delayed grazing, well-dispersed grazing, reseeding. Ponds were built at strategic locations to bring about more even distribution of the grazing. Grazing districts were established, under the direction of local ranchers. Technicians of the Soil Conservation Service made range surveys and conservation land surveys of the purchased areas and, in cooperation with the ranchers, worked out the grazing capacity of the land, area by area.

On a tract of 248,230 acres near Wall, S. Dak.—the Cane Creek District—7,911 animal units were put on the range after the improvement work got well under way for a 7½-month grazing season; now, this year, the same area is carrying 16,821 animal units for the same length of grazing season, and the grass is still improving. Also, the erosion is almost completely under control. Not only that, grazing fees are paying the cost of the Government's contribution in the way of technical help, keeping records, etc., as well as the costs of upkeep of the range by the graziers through their grazing districts. Local estimates, moreover, were to the effect that more returns were going into the exchequers of the counties including the grazing lands than the counties had ever received from taxes. Besides this, good payments were being deposited in the Federal Treasury in accordance with the requirements of the Bankhead-Jones Act.

Some of the improvement work in this pasture (if you can call that much land a pasture) consisted of 115 stockwater ponds, 9 springs developed, 33 cattle guards, 209 miles of boundary and cross-fencing, and 19,333 acres seeded to crested wheatgrass. And, altogether, 142 cooperatives were using the grazing land, and paying for it.

Approximately 200,000 acres of South Dakota land that was producing little or nothing a few years ago have been reseeded to grass by the Soil Conservation Service in cooperation with soil conservation districts and grazing districts.

### **Water Spreading**

As estimated, on the basis of our surveys and experience with water spreading on some 5,000 acres of land in southwestern South Dakota, there are in the neighborhood of a million acres of range land in the western third of the State on which it is practical to carry on water-spreading operations that will result in doubling the carrying capacity of the land. We drove through some of

the land on which water spreading had given such an increase. It's a promising field of agricultural endeavor for South Dakota and other Plains States. You will hear more of this, I am sure.

### **Stubble-Mulch Farming**

Stubble-mulch farming is getting along nicely in South Dakota. In some localities pretty nearly all of the grain stubble which we saw plowed had a good mulch of straw and stubble on the surface. In some places we saw about 50 percent clean plowing with no surface mulch and in other places about 85 percent of fair to good stubble-mulching. Use of the practice is growing. Some farmers using the "one-ways" are turning under too much of the crop residue, but ways can be found for improving this.

The idea seems to be spreading that the best time to practice subsurface cultivation for stubble-mulch work is right after the grain is harvested. It is claimed that there is no reduction of yield when the work is done at this time, but usually an increased yield. Stubble-mulch farming is an excellent way to hold both the soil and the rainfall. It will give good protection to a large share of the Plains States' cultivated land.

### **Contour Plowing Olympics**

At Sioux Falls, S. Dak., on August 18, I attended the contour plowing and terracing match, along with 4,000 others. It was an exciting event and of far more importance to people than throwing the discus over at the European Olympics, as I see it.

Two days later, I was at the 2-day plowing match and farm renovation conservation meeting at Cherokee in northwestern Iowa, attended by 43,000 farmers and others.

Nearly a thousand local farmers participated in this meeting in some assigned capacity, I was told, and about a million and a half dollars worth of machinery took part in the work or was on exhibition. Fifteen major measures were applied to the land in the "face lifting" part of the great meeting, not counting the survey and farm plan that were made in advance. I listed these as we drove back and forth over the farm.

These meetings are educating great numbers of people as to the critical need of taking better care of our declining land resource. They are being held in many States, and undoubtedly are doing



undeterminable good in the way of education. The importance of this can scarcely be overestimated because the soil is the source of our food, most of our clothing, all of our wood products, and an increasing amount of raw products for industry. It is the most indispensable resource of mankind—the only resource, along with the rains that make land productive, without which there can be no life on earth.

Yet some individuals are seeing in this movement, which was a hundred years late in getting under way, only enough to say: “Yes, but what is it costing the Government?”

My answer to this negative point of view is: It is not costing the Government a single cent; it is putting more back into the Federal Treasury as the result of the soil conservation now being done than goes out of the Treasury to pay for the Government’s technical assistance furnished to the farmers’ soil conservation districts. It’s an investment, not an expenditure.

The Government does the planning for soil conservation work on these “face lifting” farms and on the millions of other farms in soil conservation districts. Every plan made is done at the request of the farmer-managers of the districts.

### **Modern Flood Control**

During the Cherokee round-up, I stopped off to see the flood control work being carried on under the Little Sioux River Watershed Authorization. Here the Soil Conservation Service is co-operating with the local soil conservation districts in this important phase—the upstream phase—of the flood control job.

The job is being done, subwatershed by subwatershed, beginning at the upper end of the tributary streams, along the “little waters” where floods originate, and working on down to the main channel of the Little Sioux. The procedure is exactly the same in principle as it is in the other watersheds of the country where the Department of Agriculture, through the Soil Conservation Service and the Forest Service, is going extensively into flood control work on watersheds, as authorized by Congress in the 1936 Flood Control Act. The major engineering improvement of rivers for flood control and allied purposes is the responsibility of the Corps of Engineers, Department of the Army. The two Departments work closely together to handle Federal responsibilities for flood control in authorized drainage basins,

the activities of one agency supplementing those of the other. This upstream work is an outgrowth of the Upstream-Engineering Conference held in Washington on September 22–23, 1936.

The flood control part of the Service’s contribution consists of public-benefit jobs over and above the ordinary soil conservation work carried out, farm by farm, in soil conservation districts. It covers such items of work as the construction of water-detention reservoirs, gully plugs, diversions, and roadside work of the kind that farmers cannot and should not be expected to do. Farmers ordinarily cannot carry out such operations because of their size and also because they have a public benefit, affecting many people downstream from the points of installation. But the farmers are helping, the county highway authorities are helping, the soil conservation districts are assuming responsibility for general maintenance operations and farmer cooperation, and a committee of 12, in the instance of the little Sioux, composed of representatives from the various soil conservation districts covering portions of the watershed, is furnishing very helpful assistance in setting up priority work jobs, assignment and routing of machinery, developing arrangements for farmer and soil conservation district assistance in connection with the cost and execution of maintenance operations, and so on.

Such a highly cooperative arrangement with the farmers is perhaps the backbone of the matter of getting the flood control job done expeditiously and effectively and of maintaining the installations.

### **Theobold Subwatershed**

The Theobold watershed of 861 acres affords a typical example of the need for detention reservoirs and other water controls along those tributaries of the Little Sioux which traverse the steeper and more difficult parts of the watershed. In this tributary valley, from the upper to the lower end, 3 detention reservoirs; 10 dams, 9 with drop spillways and 1 with chute; 2 road culverts, 1 with chute and 1 with drop inlet; and 2 pipe drop inlets are being installed. The installation of these 17 structures involves approximately 15,800 cubic yards of excavation, 226,400 cubic yards of earth fill, 1,200 cubic yards of reinforced concrete, and 2,000 feet of various kinds of pipe, ranging from 6 inches to 30 inches in diameter. Along the main channel, which has



a total fall of 114 feet in about  $1\frac{3}{4}$  miles, a large detention reservoir and 10 small structures will provide for  $85\frac{1}{2}$  feet of drop in the water flow (114 feet total, less  $28\frac{1}{2}$ -foot fall along the channel between the structures). This is the equivalent of reducing the amount of fall in the channel proper to  $28\frac{1}{2}$  feet or from a gradient of about 1.3 percent to 0.3 percent. Thus, much of the channel cutting power of the water— $85\frac{1}{2}$  feet of drop—will be eliminated by reason of the fact that the energy will be dissipated by dropping on concrete platforms. These 11 structures thus will have the result of reducing the velocity of flow along the earth channel sections sufficiently to prevent serious channel erosion and, coupled with the 6 structures in lateral drainages and the installation of other soil and water conservation measures and proper land use, will practically control the entire erosion problem in the subwatershed.

Looking over the engineering work having to do with the handling of water in this watershed, one finds rather complicated mathematics translated into the simplest sort of structural devices. The elements of obscurity that normally saturate mathematical equations insofar as most people are concerned are all obliterated. You see at a glance just how the cutting edge of falling water is almost done away with.

### Nepper Subwatershed

In the Nepper watershed, comprising 485 acres, the job of both soil conservation and flood control installation was completed while I was there on August 19, 1948. An interesting item in this watershed is the installation and stabilization of drainage outlets (with grass seedings to protect the banks). In one place where a county road was involved, the county authorities paid for the movement of earth along both sides of the roadbed, amounting to something like \$4,000.

The Nepper watershed job was, in point of complexity, a pretty close runner-up to the Cloud Creek watershed of the Washita River flood-control job in Oklahoma. I attended the celebration of the completion of the Cloud Creek job in July, this year. The occasion of that celebration was the completion of the first flood-control job of a tributary floodstream from upper to lower end as provided for under the cooperative arrangement between the Soil Conservation Service and a soil conservation district. Closely similar jobs have been completed on other watersheds, such as Jones

Creek tributary of Soldier Creek, which parallels the Little Sioux. The Jones Creek job was completed by the Soil Conservation Service through the use of a Civilian Conservation Corps camp in 1938. As both a flood-control and erosion-control undertaking, the Jones Creek work has functioned with a high degree of success. It has controlled the erosion almost 100 percent and siltation by nearly 100 percent, and it has reduced flood heights by approximately 75 percent.

This kind of flood-control work, as well as the acre-by-acre complete soil conservation treatment of farms, is something entirely new in America, and probably in the world.

The concept of both is the product of the Soil Conservation Service and its staff. As a matter of fact, both ideas were part and parcel of the original method of procedure adopted by the Soil Conservation Service in its beginning, and adhered to, with refinements, until the present. There are likely to be imitations and shortcuts; but only work based on this sound concept that takes into full consideration the pertinent physical facts can succeed. This is no one's opinion; it's the statement of a law of Nature.

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## NORTHEAST

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**SUPERVISORS TALK MAG.**—The supervisors of the Middlesex (Conn.) Soil Conservation District have written to all cooperators telling them about SOIL CONSERVATION Magazine. Many cooperators, says the letter, will undoubtedly wish to subscribe to this publication which is so "filled with good ideas on sound conservation practices" and which carries enjoyable reading on "what other conservation farmers throughout the United States are doing." The letter suggests that farmers wishing to subscribe send their checks to Vic Galgowski, secretary-treasurer, for transmittal to the Superintendent of Documents.

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## SOUTHEAST

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**MORE FISHIN' WORMS.**—Take it from Henry Sheppard, if you want plenty of fishing worms just grow crotalaria long enough and there will be plenty for the digging. Sheppard, a cooperator with the Lower Chattahoochee River Soil Conservation District at Americus, Ga., said



that in one field where he has grown crotalaria for 12 years as a part of his soil conservation program, he can go out any time the soil is moist and dig fish bait anywhere.

"I don't know anything else that will make the land that rich," Sheppard said, adding that crop yields as well as fish bait have been boosted by conservation farming. "We have made some good yields as a result of conservation practices," he commented. "Last year our wheat averaged 26 bushels to the acre. We usually make 45 to 50 bushels of oats per acre and we have made as high as 65."

**EQUAL TO YEAR IN COLLEGE.**—The Elloree Negro Group Drainage Project in the Orangeburg County Soil Conservation District of South Carolina was completed in July when the last of the 7,116 yards of earth was removed in excavating a main canal 1.1 mile long serving seven farms along Santee River.

An instructor in South Carolina's A. and M. College, brother of the Elloree Group leader, was so pleased with this job that he invited the college's Dean F. Marcellus Staley to look over the project. After seeing the work of this Negro group, Dean Staley applied to the district for the assistance of Soil Conservation Service technicians in helping the college staff plan and apply a complete soil and water conservation program on the college farm.

Work Unit Conservationist Joe Earle then conducted the college officials over the E. B. Mack farm where they studied the treatment of land according to capability classes. Upon completing the field study, Dean Staley remarked, "The trip to Mr. Mack's farm was equal to one year of study in college."

**PASTURE ON WHEELS.**—Roy Beck, work unit conservationist at Beaufort, N. C., used pastures on wheels to arouse interest in a complete conservation program.

On a recent visit to the Carteret Work Unit, District Conservationist R. P. Moore noticed a group of farmers huddled around the back of an SCS pick-up with their attention focused on something in the truck bed. He found they were examining Ladino clover, sericea, and other plants growing in bushel baskets.

These baskets of pasture and hay crops have traveled over most of the roads of the county as Beck goes about his duties. When the pick-up stops for a while it never fails to get an audience.

**GOOD FARM PLANNER.**—A good farm planner is one who uses the farmer's interest in one or two practices to get him to adopt a complete conservation plan where the capabilities of both the land and the man have been given consideration. This planner gets practices applied and maintained.

A poor farm planner is one who lists several conservation practices needed, and buys the farmer's signature by giving him assistance on the one or two practices in which the farmer is interested. This planner gets poor application and maintenance of planned practices.

These are two of several conclusions drawn by A. H. Chapman after making a thorough study of 726 farm conservation plans of 17 work units in 7 southeastern States. Chapman is assistant chief of the regional project plans division of Soil Conservation Service, Spartanburg, S. C.

A few other conclusions:

1. Farmers are, almost without exception, for soil conservation.

2. Farmers value soil conservation, first, as a good financial investment, and second, for erosion control benefits.

3. Where SCS work unit personnel have been at one location for a considerable length of time, they are held in high regard by the public generally and application of the program is satisfactory.

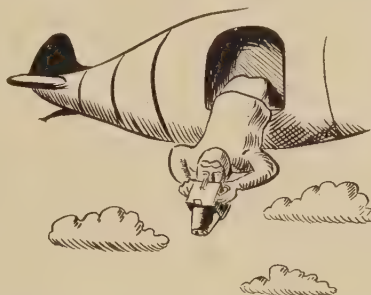
4. Frequent changes in work unit personnel have been detrimental to the work of districts.

5. Work is greatly accelerated by the addition of one or more well-trained SP-5 conservation aides to a work unit staff.

6. Properly planned farm conservation programs effectively presented at the time of planning constitute the best insurance that satisfactory goals of application and maintenance will be met.

**STILL MORE READERS.**—From South Carolina comes word that the Bishopville Kiwanis Club, noted for being on its toes, has entered 15 subscriptions to SOIL CONSERVATION Magazine. Copies will go to high schools and veterans classes.

## UPPER MISSISSIPPI



**LOOKING DOWN ON DISTRICT DOINGS.**—Commissioners of the Mills County, Iowa, Soil Conservation District recently purchased an aerial camera. They have been getting pictures of the progress of soil conservation on the farms of southwest Iowa and by late fall expect to have 300 aerial pictures of district activities and accomplishments.

Many photographs are in color. They will be used to show farmers the benefits of modern methods of anchoring the soil and putting their land to its proper use.

The district, by the end of 1948, will have completed 1,000 miles of broad base, level terraces. These are located on a majority of the 328 farms under the district program.

But these farmers are not satisfied with terracing alone, or with any single soil-conserving practice. Their main interest is in putting land to its best long-term usefulness.

Farmers are emphasizing proper land use as the key-stone of a conservation program. And that, on many farms, means an increasing acreage of grass and legumes.

**NO PLOW.**—Dave Cover, cooperator with the Johnson County, Ill., Soil Conservation District, loaned his plow to a neighbor a few years ago. He hasn't used one since. He has changed to grassland farming.

In a southern Illinois neighborhood where corn production is considered a "must," that is close to heresy. But Cover is proving that with grass you can produce good Hereford cattle, check erosion, and make a better living. Forty acres of apple orchard is another major enterprise.

Three hundred and twenty acres of hay and pasture provide grazing for his 100 head of cattle 9 months of the year and feed them through the three winter months. Seven ponds provide ample livestock water. Six-hundred-pound calves sold in the fall prove the effectiveness of this system.

Where there used to be a lot of broomsedge and weeds in his pasture, he now has a lush growth of redtop and lespedeza as a result of liming and fertilizing the land prior to seeding. Cover also is a cooperator with the Extension Service and with TVA on its phosphate demonstrations. He says that the carrying capacity of his pastures has more than tripled.



**HUNGRY HERDS.**—M. A. Drake, cheese factory owner of West Prairie, Wis., has observed the value of soil conservation and knows that cows on high-quality pasture produce more milk than those on ordinary pasture.

In July he announced that his 104 patrons were delivering 7,000 pounds less milk per day than they did a month earlier. He blamed it on poor pasture and the fact that the cows just weren't getting enough to eat. Farmers generally agreed with him.

Drake suggested that farmers renovate some pastures as recommended by the Vernon County Soil Conservation District and the technicians working in the district. Drake pointed out that these renovated pastures of alfalfa, brome grass, and Ladino clover, continue to grow and provide forage through hot, dry weather when June grass is dormant. Necessary liming and fertilization, plus a thorough disking of old sod, must accompany the reseeding.

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## WESTERN GULF

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**GOING CONCERN.**—The finest soil conservation district-owned headquarters in the Nation is claimed by the Central North Canadian Soil Conservation District of Oklahoma. Their new building, constructed at a cost of \$30,000, was occupied the last day of August. Part of the space is rented to the Soil Conservation Service work unit, part is reserved for district use. The structure was built with donations from businessmen and farmers in the Geary, Okla., vicinity and with money which the conservation district made in seed and equipment deals.

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**TRIBUTE FOR OUTSTANDING WORK.**—A gratifying tribute for outstanding work in range conservation has been paid the Soil Conservation Service and B. W. Allred, regional range division chief for the agency at Fort Worth by the *Sheep and Goat Raiser Magazine*, published at San Angelo, Tex., by H. M. Phillips. Allred is a frequent contributor.

The magazine stated in an editorial published in the August 1948 number:

"A few years ago ranchmen were more concerned over the effectiveness of the latest screwworm remedy than soil erosion on their ranch. They were more interested in the latest stomach worm drench than in the productivity of the south 100 acres of hillside grassland. The development of the sore-mouth vaccine created immeasurably more enthusiasm than did the pronouncement by certain ranchmen and ranch leaders that the range was being overgrazed and that bitterweed spread, etc. was resulting from such abuse.

"Today most of the ranchmen are considerably more interested in grass improvements and proper range man-

agement than any other phase of ranching. This is demonstrated by the fact that more than 1,600 requests for reprints were received for one article on grass run in this magazine. Too, ranchmen have learned that ample grass is the best medicine for livestock and a well-fed animal is usually a well animal.

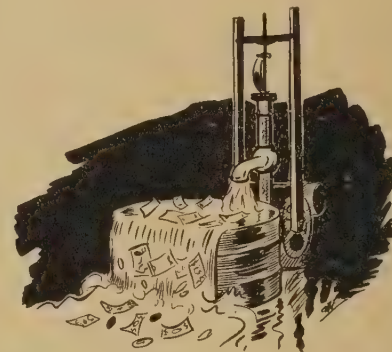
"This interest in grass and range management is as it should be. In fact, many ranchmen have waited until it is almost too late to do anything about their grass and until much of the soil on their ranches was seriously impaired.

"In 1937 we tried to secure information for the readers of this magazine on grasses and their respective values on the range. It was not until some 10 years later that we found a source for this type of information. B. W. Allred, Chief, Regional Range Division, Soil Conservation Service, Fort Worth, Tex., could do and has done the job. Appreciation for his articles in this magazine during the past 2 years has been expressed in many ways by scores of ranchmen. He has emphasized a point that is becoming more and more apparent to the ranch operator and the landowner. Grass is basic; it and the land on which it grows must be protected and utilized wisely. In grass lies the wealth of this Nation. In grass rests the future of this Nation. The ranchmen have great responsibilities, thereby."

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## NORTHERN GREAT PLAINS

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**PUMPING OUT PROFITS.**—It cost John Barringer \$1,000 to level 36 acres of land that he could not irrigate, but the first year afterward that land produced \$6,500 worth of crops. Barringer farms near Hathaway, Mont., in the Cartersville-Thurlo w Soil Conservation District. Leveling was part of the farm conservation plan worked out with the help of SCS technicians.

Barringer's 180-acre farm is one of seven in a small irrigation association that pumps water from the Yellowstone River. Water is pumped by two pumps, each with a capacity of 6,500 gallons a minute. All 750 acres in the association were irrigated last year for \$489 electric power cost. Cost of installing the pumps was about \$4 per acre.

The year after leveling Barringer produced \$600 worth of corn, \$1,200 worth of flax, and \$4,500 worth of certified seed potatoes.

Barringer also intends to change over to more irrigated pasture in order to get grass into the crop rotation for the whole farm.



**NO LONGER SNOW-BOUND.**—Because he planted a farmstead windbreak in 1943 as part of his farm conservation plan, he was the only one in the nearby neighborhood who did not have snow piled up in his yard last winter, is the report of Clifford Burke near Hudson, S. Dak., co-operating with the Lincoln Soil Conservation District.

"We never dreamed that the windbreak would mean so much to us when we planted it in 1943," Burke said. "Wind and blowing snow used to be bad in the farmyard. Living conditions were disagreeable.

"But now that the tallest trees are up 10 to 12 feet, we feel little wind. And even last year, when snow was unusually heavy, we had no snow blowing about the yard."

The windbreak is 100 feet from the buildings and includes a row of low-growing shrubs, a row of evergreens and three to four rows of hardwood trees.

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**FREE TO CHOOSE.**—Watching people in a self-service grocery store gave an idea to Purley Horne, farmer near Junction City, Kans.

"I noticed how much people enjoyed picking out the goods they bought," says Horne. "I figured that cows would get just as much kick out of choosing their own food. And they do.

"So now, my cropland is in grass and legumes instead of grain. I have the bromegrass-alfalfa for spring, fall and winter grazing, and native pastures for summer use. I feed hay to the stock in winter.

"I'm raising more beef than ever and, outside of the hay I feed, the cows do the work. More than that, erosion has been checked."

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**PRACTICES DOVETAIL.**—Terracing and contour farming gave Charles Schroeder better quality grain and forage and increased yield of from 5 to 10 percent, and protection from gullies and sheet erosion. Schroeder, a cooperator with the Chao Soil Conservation District, farms 1,200 acres near Holbrook, Nebr.

"A farm needs a *complete* program of conservation," says Schroeder. "One good practice often depends on another."

Schroeder also uses other conservation measures, such as good pasture rotation and management, and the retirement of steep, eroded areas from cultivation. On his farmstead windbreak, now started on the north and west sides of his farmstead, he keeps the trees cleanly cultivated to promote maximum growth and survival.

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## SOUTHWEST

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**LEVEL THE LAND.**—Land leveling pays dividends to co-operators of the Sevier County Soil Conservation District in Utah through savings in labor and water and increased crop yields.

Dr. Ray E. Noyes says that leveling and grass-clover plantings have increased his production by at least one-third.

Lincoln Crane reports that the leveling of one of his fields is saving a lot of water and that he plans to do some additional land leveling this fall.

Verr Durfee states that after his field was leveled he needed only half as much water to germinate his sugar beets as was required on fields that had not been leveled.

Perry Jensen has found that the leveling of a 20-acre field has reduced his water needs by half.

Clifford Magleby needed 24 hours to fill the low places on his field and 4 days to irrigate 12 acres before his land was leveled. Now, he says, he can irrigate 30 acres in 4 days on 8-hour turns.

**MANAGED WATER.**—Land leveling on two farms operated by J. E. Williams near Hatch, N. Mex., has reduced irrigating time to approximately thirty-six 7-hour working days annually. Irrigation is being done with 40 percent less water. Higher-yielding crops are expected. Williams believes that his savings in labor and water will be even greater after the leveled fields have settled properly.

One of the farms being operated by Williams is his 35-acre home place, and the other of 17 acres is on the Melvin Underwood place. Underwood leveled both tracts last winter in cooperation with the Caballo Soil Conservation District.

The program worked out by Soil Conservation Service technicians called for considerable changes in lay-out of fields. Both had considerable slopes in several directions and were being watered diagonally. The soil and water conservation plan provided for the leveling of the fields in benches, each being laid out to fit the topography and to keep dirt moving to a minimum. The length of irrigation runs was reduced to around 600 feet. The field ditches were improved and structures were installed at proper points to fit the various levels of the fields.

Leveling the 35 acres required 257 hours and the movement of 20,000 cubic yards of dirt. During the first irrigation this year, three men watered the tract in 20 hours. Last year three men had needed 72 hours to do the same job.

"I figure on four waterings a year, so this means that I will save 208 hours a year in irrigating this 35-acre field," Williams said. "All the ditch boxes on this field were set in soft dirt and didn't hold water as they should, so I believe still more time and water can be saved after the boxes have settled properly."

After the 17-acre field was leveled, Williams was able to irrigate in 5 hours. Last year the same job required 17 hours. Figuring on four irrigations yearly, Williams estimates he will save 48 hours annually on this field.

Williams pointed out that this means a saving of 256 hours, or approximately 36 days annually, in irrigating his two fields. He also estimates that he is using 40 percent less water this year.

Williams is especially pleased with the way his fields are watering after the soil and water conservation program was applied. When he irrigated last year, the water formed knee-deep ponds in places. This year, with the land leveled, he has seen the water spread evenly over his fields with no serious puddling.

While Williams is well pleased with results already obtained, he is looking forward to still more improvements.

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**7,000 ACRES.**—Revegetation in the Haxtun (Colo.) Soil Conservation District is showing progress. Several years ago this section consisted of one abandoned field after another, taken over by undesirable grasses and weeds. Now, with favorable climate and soil conditions, more than 7,000 acres of reseeded land in Logan, Sedgwick, and Phillips Counties are proving profitable ventures.

More than 125 people took part in a tour recently sponsored by the district. It included farms of co-operators who pioneered the reseeding of their land to crested wheat-grass and clover several years ago.



**HIGH IN PROTEIN.**—Sweetclover as a green manure crop has paid off for Delbert Fuhrman, cooperator with the Northern Utah Soil Conservation District. Last fall, Fuhrman harvested 5,000 bushels of wheat from land that had been improved by a green manure crop of sweetclover and alfalfa. He received around \$2,000 as a bonus for the high protein content of his wheat and the bushel yield per acre was about 20 percent higher than other fields not treated in the same fashion.

## PACIFIC



Smiling "Ginny" and her rancher Dad.

**RADIO STAR GOOD FARM HAND.**—Dormer Simms, western-raised dad of "Ginny" Simms, radio and screen star, won't argue the point that conservation farming is the best way to use the land.

Simms, a cooperator of the San Fernando Valley Soil Conservation District, in southern California, is no country squire. Dude ranching, he says, is strictly out of bounds when you have to make each acre count.

Tackling tough land problems and the windfalls of ranching don't get him down. He gets a laugh out of life as he goes along. On 17 acres of his new Virleedo Farms, he raises registered hogs and milking shorthorns. Today, his ranch, 2 miles north of Northridge in the San Fernando Valley, is a show place of better farming methods. But gaining a reputation as a successful stockman takes more than rule-of-thumb ranching.

"Going down the line for conservation ranching," says Simms, "means putting your farm conservation plan to work. It will pay off for farmers, but they have to use it step by step. It's the old story of planning your work and working your plan. I use my farm plan as a constant guide to help me work out my farm problems. It shows me how to make each acre of my land produce above par."

The new sprinkler system which "Doc" Cureton of the San Fernando SCS staff helped him lay out last spring

has already paid for itself. Simms got nine cuttings of alfalfa off one 3-acre, sprinkler-irrigated field. His portable sprinkler system waters 6 acres at a time and can be moved from field to field.

Simms likes the "gentle rain" type of irrigation. He is pleased at being able to turn it off and on at will. He's just getting started on the rest of his farm plan. Improved pasture seedings, rotation grazing, weed control and fertilizers, are among his priority jobs.

Virleedo, the Spanish sounding name given the farm, is a composite of the names of daughter Virginia, "Ginny", Mrs. Lee Simms and rancher Dormer Simms.

The Simms' 100-foot long, California "rancho" home was designed by "Ginny." Vacationing this summer at her Malibu Beach house near Los Angeles after a busy season on the air, the star makes frequent visits to Virleedo Farms.

Simms says that "Ginny" herself is quite a farmer. She can do nearly any farm chore. That includes running tractors, pick-up hay bailers, hay rakes, plows, disks, and other implements. She's a big help when she's home.

Says Simms, "I sometimes wish 'Ginny' could sing a song about soil conservation. She's so sold on it."



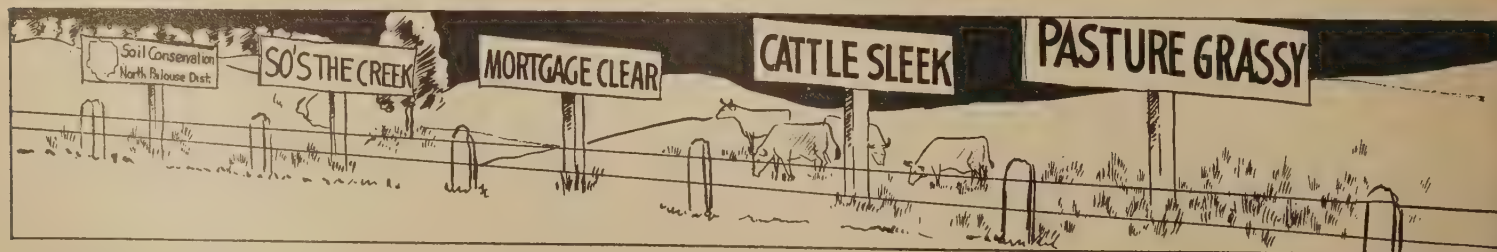
**ROADSIDE RHYMES.**—Supervisors of the North Palouse Soil Conservation District in eastern Washington believe in soil conservation with a chuckle.

Early this year the North Palouse district sponsored a soil conservation jingle contest among grade school youngsters in Palouse and nearby Garfield. Originally, the idea was simply to add spice to studies about soil conservation. But when all entries were in, judges decided the jingles were much too good to file and forget.


Someone suggested that winning jingles be posted along the highways on signs similar to those used to advertise a popular shaving cream. The idea was promptly adopted. Jingles posted along roadsides now call attention to various soil conservation practices in many parts of the North Palouse district.

It is hard for travelers to miss the point. Each roadside jingle has been strategically located to call attention to a specific soil conservation practice. A jingle pointing out windbreaks, for example, is placed where trees growing on a hilltop are clearly visible. The same is true for jingles about gullies or the use of grass and legumes. District supervisors move the signs from time to time to make sure there can be no mistake as to what each jingle is about.

In addition to posting the winning soil conservation jingles along the highways, the district arranged for all youngsters who won prizes to repeat their jingles on the radio from Spokane and Pullman, Wash.







*January  
1949*

# ≡ SOIL CONSERVATION ≡

**OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE**

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.



# SOIL CONSERVATION •

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### WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

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**GOLF REPLACES GULLIES.**—A group of enthusiasts recently purchased an eroded, run-down farm located halfway between Logan and Missouri Valley, Iowa. This 76-acre plot of land will be the Logan-Missouri Valley Country Club Golf Course.

Realizing the seriousness of erosion and soil depletion on the farm, the improvement committee called on Harry R. Acrea, chairman of the Harrison County Soil Conservation District, Iowa, for assistance and advice in solving the problems.

Acrea took complete charge of the farm and secured the assistance of SCS technicians. A comprehensive survey was made to determine the most feasible way to control upland erosion and prevent flooding on 15 acres of bottom land. With this detailed survey as a start, a complete conservation plan was developed. The plan called for the following measures, which were applied on the land in the spring of 1948: Two and a half miles of level terraces; 2,800 feet of diversion terraces; 4,000 feet of grassed waterways; 1,000 feet of 2-way open channel diversion ditch; and a drop inlet detention dam 400 feet long, 17 feet high, 14 feet top with side slopes of 4 to 1. A complete seeding and fertilizer recommendation was included.

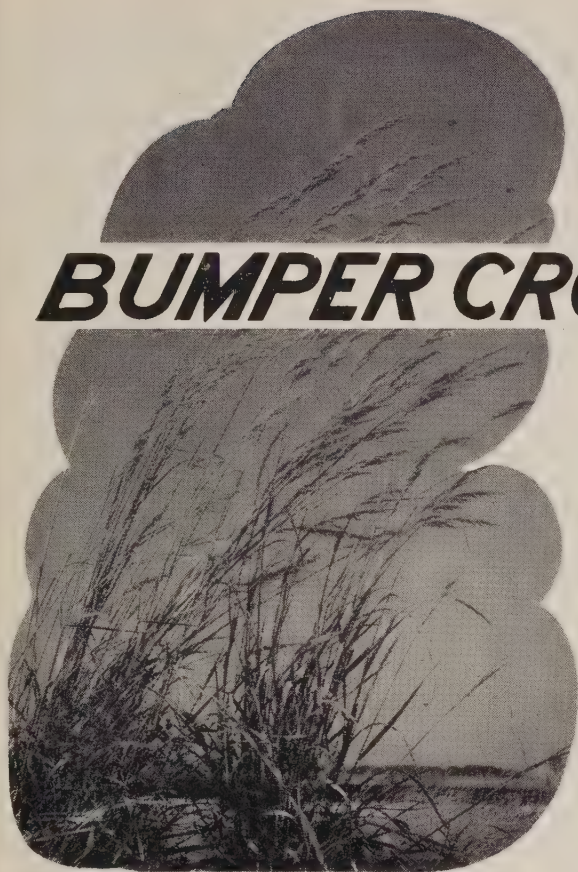
(Continued on page 124)



**FRONT COVER.**—Grain sorghum stubble grown on contour traps snow and holds it against the wind at the soil conservation experiment station at Amarillo, Tex. See Hugh Bennett's article, "Land Facts," in this issue. The photograph is by Hermann Postlethwaite.

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# ***BUMPER CROP* of NATIVE GRASS *Seed***

Two Indian grass plants, heads filled with seed.

By H. M. CHAMBERS

**T**HE biggest harvest of native grass seed in the Nation's history took place in northeastern Oklahoma during the first half of October. Combines ran from dawn till dark. The yields filled every available square foot of storage, including a good part of the huge Douglas Aircraft factory at Tulsa.

The native grass—the big and little bluestems, Indian grass, switchgrass, and side-oats grama—was the best since Oklahoma first was settled. Even the old timers can't remember a year when northeastern Oklahoma prairies had such a magnificent stand of vegetation.

Good June and July rains, followed by more moisture late in August, helped the plants along. It was not unusual to find entire sections under grass 9 feet high.

The grass seed harvest was instigated by the Soil Conservation Service. The agency wanted enough seed to plant a million depleted acres up and down the Washita River in western Oklahoma. Revegetating these lands is part of the \$11,000,000

flood control program which SCS and the soil conservation districts are carrying on for that watershed.

Soil conservation districts, private operators, and the Soil Conservation Service all participated in the seed harvest. Roughly, they combined a huge crescent surrounding Tulsa on the north, east, and south.

More than 1,500,000 pounds of seed were brought in from the prairies. All of that seed had to be spread out in layers no more than 6 inches thick. That's because native grass seed heads—unlike wheat or oats—ripen unevenly. The seeds at the top of a plant may be dead ripe and ready to shatter while those lower down on the same plant may remain green. Scattering the combined material in the thin layers allows the seed to dry without damage.

The Soil Conservation Service operated 70 large combines, most of them self-propelled, and 15 smaller pull-type machines. Contract combine crews, many recently returned from the wheat harvest, owned and ran the equipment. A fourth of the seed harvest was given to owners of the land.

The Caney Valley Soil Conservation District, Bartlesville, and the Okmulgee County Soil Conservation District, Okmulgee, did their own harvesting. The Caney Valley district owns a small combine and contracted two others; the Okmulgee unit contracted seven small combines.

NOTE.—The author is state conservationist, Soil Conservation Service, Oklahoma City, Okla.



Bob Hartley, 21-year-old rancher of Vinita, made the largest single private harvest. He had 17 large combines which cut an estimated 450,000 pounds of seed. Part of Hartley's seed has been optioned to a Texas firm.

Another individual operator was Claude Kilpatrick of Bartlesville, who harvested more than 25,000 pounds. Other private operators were at Pawnee, Nowata, Miami, and Newkirk.

The harvest got under way the last few days in September, after a warm-up the last week of August on side-oats grama. That plant yielded 50,000 pounds of seed, most of which was bought by the Soil Conservation Service for the Washita watershed. The bluestems did not ripen until October.

More than 150,000 pounds of bluestem seed were cut daily. Some acres yielded 300 pounds each.

Clarence E. Bunch, of Geary, was in charge of the main SCS harvest. He is an agronomist working on the Washita. He had expressed the hope that 1,000,000 pounds of seed could be obtained—a figure which was topped before cutting was half done.

All the seed which Bunch and his crews harvested will be used in Oklahoma during the next 3 years. James E. Smith Jr., of Woodward, an SCS nursery manager, harvested a 1-year supply of seed for use on the Trinity and Middle Colorado River watersheds of Texas, where there are district and flood-control projects. He operated 16 combines north of Vinita.

In addition to the storage facilities at the Douglas Aircraft plant in Tulsa, the combined seed was placed in barns, fairgrounds, aircraft hangars, and privately owned buildings from Coffeyville, Kans., to Okmulgee, Okla. Several large Army buildings at Camp Gruber, Muskogee, also were utilized.

Rain and wind, according to Bunch, would have ended the harvest in a day. "If there had been a beating rain or a sustained high wind, the grass would have gone down and the seed shattered. We had 1 day of fairly high wind which knocked most of the Indian grass out of the seed heads. If the bluestems had been dead ripe then we would have lost it."

Bunch explained that native grasses don't make a seed crop every year. "They'll average some seed about 1 year in 4; they'll make good seed about 1 year in 20," he said.

Native grasses speed up recovery. Bunch reports that nature will bring most idle land or

well-managed range land back to a soil-holding cover of good grass in a period of 6 to 12 years, but that the same job often can be done in 3 to 5 years by artificial reseeding. Special seed drills with fertilizer attachments have been developed to plant the native grass seed. Those seeds are planted in their trashy state, just as they come from the combine.

#### SEED HARVEST AT FULL BLAST

1. Scalper used to clean up bluestem seed. This is in barn of Claude Kilpatrick, near Bartlesville. Crew members are Frank Zoski, Cecil Zoski, and James Whitson.
2. Self-propelled combine going through tall big bluestem grass on T. J. Stockton Ranch. This stand went better than 150 pounds to the acre. Owner of the machine operated under contract with the Soil Conservation Service.
3. Switchgrass. These plants were about 7 feet tall. Their seed was almost dead ripe.
4. Hangar at Coffeyville, Kans., airport to store seed of bluestem grasses harvested in northeastern Oklahoma.
5. Three self-propelled combines operating under contract in cutting big and little bluestem and Indiangrass, Upper Verdigris Soil Conservation District.
6. Clarence E. Bunch reaches up to heads of big bluestem grass soon to be harvested. He is Washita River flood-control agronomist, in charge of the seed harvest in northeastern Oklahoma.
7. Big bluestem grass about 9 feet tall. Their seed is ripe.
8. Unloading bluestem seed in the mile-long aircraft plant at Tulsa. Clarence Day and D. B. Clagg are in the truck; W. L. Elliot on the ground. This seed is from Coweta, near Broken Arrow.
9. One plant of little bluestem 3½ feet tall, seed about ripe.

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*(Continued from page 122)*

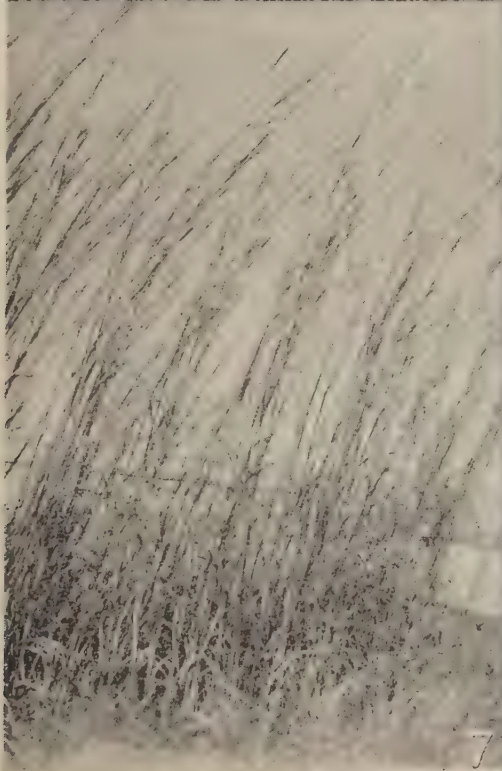
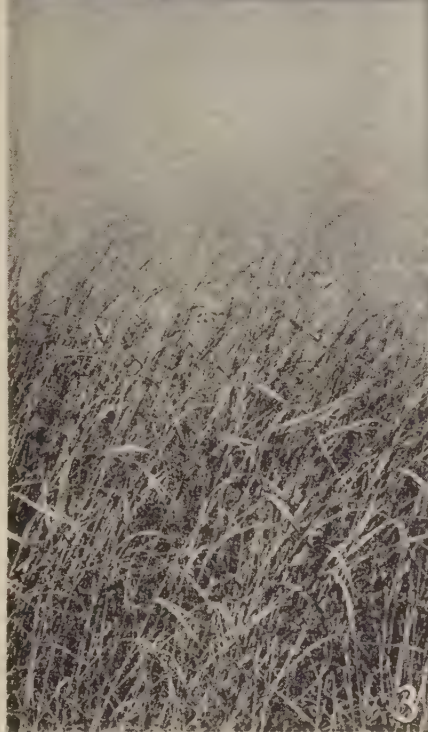
These practices were necessary to reduce runoff from the upland and to ease the flooding of the bottom land. The diversion terraces discharge the runoff water from an adjoining farm into the grassed waterway. The grassed waterway will empty into a 1½-acre pond. This fall the pond will be stocked with bass and bluegills. The detention dam will not only stop the ugly gully, but will also create a recreation site for club members.

The grass seeding will be completed this fall. The past season the entire farm was in oats seeded with sweetclover. The sweetclover and oats straw were plowed into the soil to build organic matter.

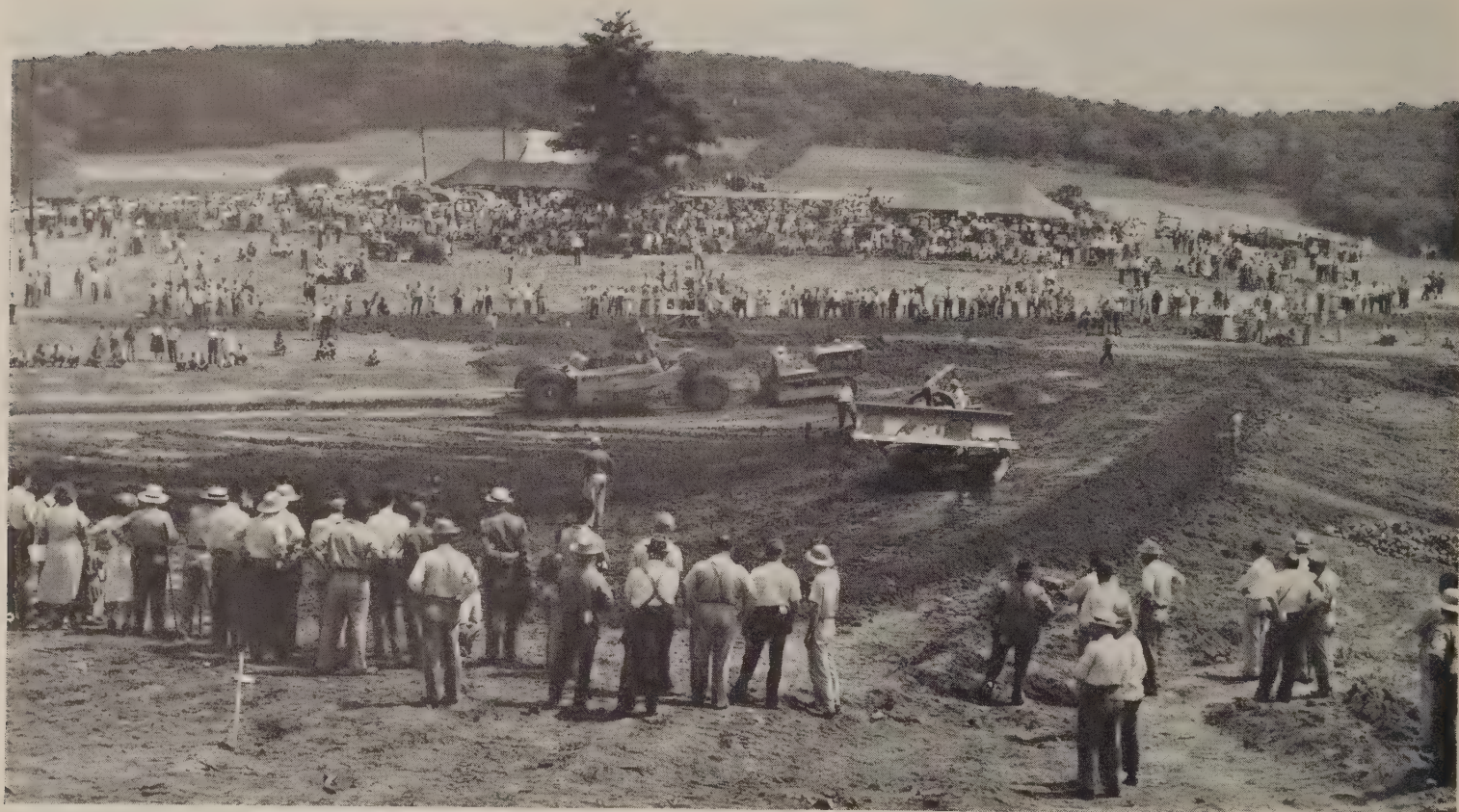
F. W. McDermott, Missouri Valley, is president of the club; Bonar B. Wood, Logan, vice president; and Don F. Schwertley, Missouri Valley, secretary-treasurer. Schwertley reports that potential members formerly were dubious about joining the club, as they could not see how it would be possible to convert a gullied farm into a golf course. However, since the conversion, people are asking to join. There are now 185 members.

As far as is known, this is the only golf course that has a complete soil and moisture conservation plan.









Building a farm pond during a conservation field day in Maryland.

## CONTRACTORS AID CONSERVATION

By T. B. CHAMBERS

ON JUNE 30 last year 14,218 private contractors were working with soil conservation districts to help farmers get the needed conservation construction jobs done quickly. They provided heavy equipment, machinery, tools of many kinds,

and the operational services necessary for getting the construction job done. When the first soil conservation district was organized in 1937 few contractors operated in this field. There was a gradual development of this contractor work through the war years. The principal increase has taken place since 1945, as needed equipment and labor became available.

NOTE.—Mr. Chambers is chief, engineering division, Soil Conservation Service, Washington 25, D. C.



Whirlwind terracer doing its stuff in New Jersey.



TABLE 1.—Contractors<sup>1</sup> and equipment in soil conservation districts,<sup>2</sup> June 30, 1948

	Wheeled tractors	Crawler tractors	Road patrols	Drag- lines	Power shovels	Ditching machines	Well drillers	Bull- dozers	Pick-up scrapers
Contractor owned.....	4,983	7,465	1,776	2,023	698	879	1,713	8,465	4,064
District owned.....	202	160	23	30	0	13	6	172	171
Owned by SCS on loan to districts.....	102	331	32	101	5	7	2	313	251
National total.....	5,287	7,956	1,831	2,154	703	899	1,721	8,950	4,486

<sup>1</sup> Contractors engaged in soil conservation districts in the fiscal year 1948—14,218.<sup>2</sup> Districts cooperating with the Soil Conservation Service in the fiscal year 1948—1,924.

The conservation work accomplished by contractors has become such an important activity that districts were asked to make a report on private contractor work and equipment. This report summarizes the number of contractors and the equip-

**Dragline cutting a farm drainage outlet in Louisiana.**

ment being used in soil conservation districts, Nation-wide.

Of all the heavy equipment used for contract work in 1,864 soil conservation districts, about 95 percent is owned and operated by contractors. The districts operate the other 5 percent on co-operating farms and ranches. Soil Conservation Service equipment on loan to districts amounts to about 3 percent of the total. In addition to these totals, a considerable number of farmers own heavy equipment, which is used on their own conservation work, not classed as contractor work.

The kinds and number of primary machines, such as tractors, draglines, and bulldozers, are shown in table 1. This equipment is roughly estimated to have a replacement value of over \$200,000,000 in new machinery. Table 2 gives a summary by the work regions of the Soil Conservation Service. In addition, many other kinds of

**With this trencher, up to 3,800 linear feet of drainage tile can be laid in a day.**

construction machines, such as blade graders, rotary fresnos, were listed in the individual district reports.

Farm machinery not commonly available on individual farms is also being used by contractors in many districts. The reports listed such things as cultipackers, plows, fertilizer spreaders, combines, slip-scrapers (fresnos), and tree planters. All of this makes it possible for farmers to move along more rapidly with their conservation work.

Many of the practices, such as terraces, farm ponds, drainage ditches, irrigation canals, and land leveling for irrigation, are being applied to the land on a custom basis. It is estimated that over 500 million cubic yards of earth were moved in applying these particular practices in the districts during the fiscal year 1948. In addition, contractors built concrete and other structures for gully control, flood control, irrigation, and similar purposes.

The Soil Conservation Service provides technical assistance to the soil conservation districts for planning, designing, and supervising construction or application of needed practices on lands under cooperative agreement with the districts. While contractors negotiate with individual farmers and receive payment directly from them, the work is planned and installed with the assistance of SCS technicians assigned to districts. The districts adopt a program of conservation suited to the physical, economic, and farming needs of the area. They set up objectives and establish priori-



TABLE 2.—Regional totals, contractors and equipment in soil conservation districts, June 30, 1948

Region	Number of—			Wheeled tractors	Crawler tractors	Road patrols	Drag- lines	Power shovels	Ditching machines	Well drillers	Bull- dozers	Pick-up scrappers
	Dis- tricts	Con- trac- tors										
Northeastern.....	156	914	Contractor owned.....	35	70	134	86	240	55	13	718	40
			District owned.....	11	9	9	9	0	2	0	59	5
			Soil Conservation Service loaned.	2	8	6	14	0	2	0	51	18
			Total.....	48	87	149	109	240	59	13	828	63
Southeastern.....	353	3,948	Contractor owned.....	2,915	1,296	202	521	75	46	338	2,169	717
			District owned.....	70	16	4	7	0	8	1	13	9
			Soil Conservation Service loaned.	4	15	13	21	0	2	0	27	4
			Total.....	2,989	1,327	219	549	75	56	339	2,209	730
Upper Mississippi.....	379	2,494	Contractor owned.....	215	1,615	319	628	182	655	179	1,459	482
			District owned.....	1	3	2	4	0	2	0	6	23
			Soil Conservation Service loaned.	6	52	0	23	1	3	0	44	19
			Total.....	222	1,670	321	655	183	660	179	1,509	524
Western Gulf.....	280	2,961	Contractor owned.....	1,116	1,132	627	347	23	5	351	1,606	529
			District owned.....	52	19	4	5	0	0	2	14	13
			Soil Conservation Service loaned.	29	14	3	9	0	0	0	15	3
			Total.....	1,197	1,165	634	361	23	5	353	1,635	545
Northern Great Plains..	356	2,033	Contractor owned.....	344	1,825	308	194	55	33	305	1,357	1,186
			District owned.....	48	28	3	1	0	0	0	28	44
			Soil Conservation Service loaned.	27	139	4	11	2	0	0	91	104
			Total.....	419	1,992	315	206	57	33	305	1,476	1,334
Southwestern.....	208	1,127	Contractor owned.....	221	1,016	106	114	53	44	324	686	778
			District owned.....	17	74	1	3	0	0	1	40	67
			Soil Conservation Service loaned.	34	80	6	7	0	0	0	46	80
			Total.....	272	1,170	113	124	53	44	325	772	925
Pacific.....	132	741	Contractor owned.....	137	511	80	133	70	41	203	470	332
			District owned.....	3	11	0	1	0	1	2	12	10
			Soil Conservation Service loaned.	0	26	0	16	2	0	2	39	23
			Total.....	140	545	80	150	72	42	207	521	365

ties. Technicians plan individual farms and arrange for group enterprises covering more than one farm where such action is needed. Farmers cooperate with technicians in both planning and application. Thus, when a contractor comes on the job, farm plans giving detailed specifications have already been prepared. The fact that in soil conservation districts uniformly comparable plans with standardized specifications are used for certain widely applied practices is of great help to contractors. Of still greater importance, the farmer has already arranged with the district to carry out the planned work found to be necessary on his farm. In this way contractors can make quick arrangements with individual farmers who know precisely what they want done, where, and how.

Some principal practices completed in the soil conservation districts of the United States during the fiscal year of 1948 totaled: 30,388 farm and

ranch ponds, 87,263 miles of terraces, 4,883 miles of field diversions, 1,089,730 acres of farm drainage, and 217,673 acres of irrigation land preparation.

Contractors are doing an important part of the soil conservation construction work in districts, although there are two other ways to get the job done. Part of the job is being done by farmers who prefer to do their own work and part by districts which own or control suitable equipment. Many farmers like to do as much of the conservation work on their own farms as they can. Modern farm equipment has proved to be efficient for such light earth-moving jobs as terraces, diversions, and small ditches. While some farmers may do such work well, there are many others who would much rather have someone else take over. The larger jobs involve equipment not ordinarily available to farmers. They call for outside assistance. District governing bodies have found it necessary to utilize



certain heavy equipment for purposes of introducing or starting various practices as a means of stirring up interest.

Some preliminary work by the districts is usually necessary to build up a backlog of work sufficient to attract contractors. Districts also need equipment for small, or isolated jobs, for the demonstration of new practices, and in some instances for the encouragement of fair prices in places where there is little or no competition. The district governing bodies may own this equipment or borrow it from public agencies. The Soil Conservation Service regularly loans a small amount of equipment (see table 1) to soil conservation districts. The equipment is then made available to farmers under routing arrangements worked out by the district and usually on the basis of an hourly cost which has been determined as fair.

Contractors operating in districts usually are paid by the farmers on whose land the work is done. Usually, the contracts are negotiated both with individual farmers and with groups of farmers for mutually beneficial projects. There are two main exceptions: First, those contracts awarded by the Soil Conservation Service and paid for with Federal funds for flood control structures on watersheds for which appropriations have been made by Congress and on public land administered by the Service; second, the arrangements made by the Production and Marketing Administration with contractors through agreement with county committees.

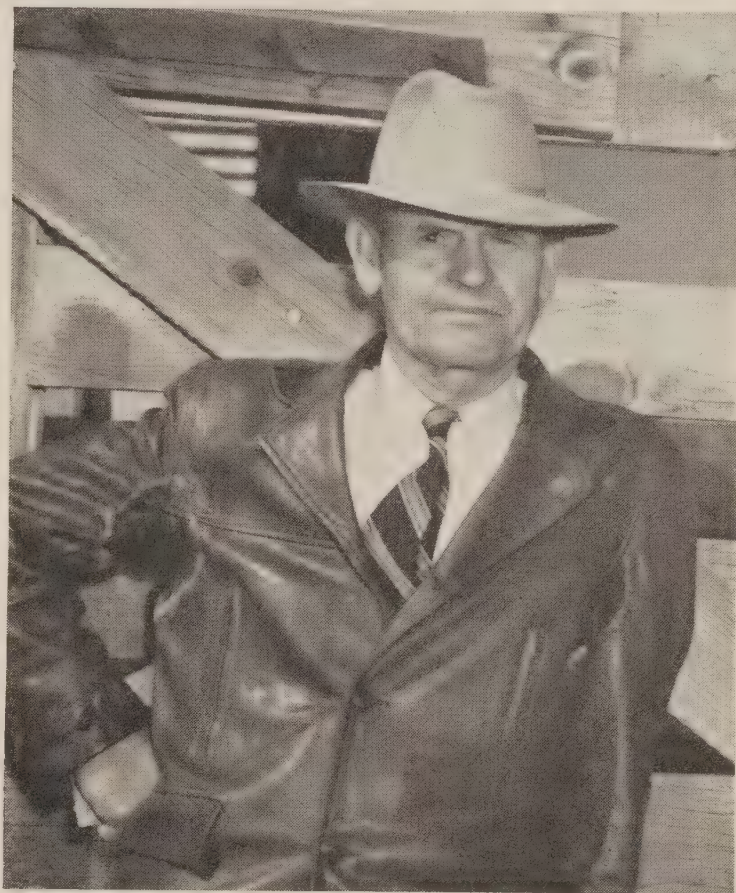
Most construction work is of a seasonal nature, although in the southern States contractors are usually busy throughout the year. By far the greatest number of contractors are small operators who have gone into the work of soil and water conservation within the last few years. Often, larger contractors have found it desirable to place construction units on conservation jobs to fill in between their regular operations.

Wheel tractors, disc plows, moldboard plows, and small scrapers are the kinds of equipment used for relatively small operations. Pond and dam builders are usually equipped with crawler tractors, pick-up scrapers, bulldozers, and related equipment. Draglines are used for most of the heavy ditching, while blade-graders and plows are used for shallow field drains. Trenching equipment is used extensively for tile drainage and bulldozers are handy for many jobs, particularly for the clearing of land.

This is a field which affords an attractive opportunity for private contractors, particularly those classed as small business enterprises, and gives promise of expanding considerably in the next few years. Many individuals now make a comfortable living and others are increasing their incomes by performing essential work for their neighbors. It now appears that many of the construction problems that have confronted district governing bodies with respect to use and management of equipment will be partially solved at least by the cooperation of private contractors.

## DISTRICT PROFILE

FRANK  
GYBERG  
—  
Arizona



Frank Gyberg, a director of the National Association of Soil Conservation Districts, is affectionately known as the "Mayor of Cornville" to his many friends and neighbors in the Verde Valley and Yavapai County, Ariz. Cornville, located on the banks of beautiful Oak Creek, a permanent stream, has a teeming population of 26 people.



In addition to his duties as "mayor" he finds time to be secretary of the Board of Supervisors of the Oak Creek Soil Conservation District. Two years ago he was State president of the Arizona Association of Soil Conservation Districts. And he has been a director of the National Association since it was organized in 1946.

Frank reads a lot, particularly ancient history. In his readings he has followed various ancient civilizations—Rome, Greece, Egypt, Arabia, and others. These civilizations gradually deteriorated and finally ceased to exist, he finds, as a result of soil depletion and erosion. "It takes a person with only a small brain to figure that our own great Nation is headed that way fast if something isn't done soon and unless more interest and activity are generated to stop the wasteful use and negligence of that thin layer of 7 inches that keeps us all alive and going," he says. "With our steadily increasing population we have got to stop something—either quit having babies or do something about soil erosion, and the Lord knows the latter would be easier."

Frank was born in Ohio and spent his youth there. But while still quite young he drifted to Wyoming and then to Arizona. He followed "cowboying" and worked for many big cattle outfits in northern Arizona until he married and settled down.

Gyberg served in World War I with the famous Black Horse Troop of the Ohio National Guard. He spent several months in France. A natural lover of horses, he never got very far from a steed. "If a horse can't get there, then a man has no business there either," says Frank.

Gyberg and wife, Louise, have been living on the banks of Oak Creek for 25 years, and they have seen acre after acre of valuable valley land washed away by flash floods. They know the value of good land.

Four years ago, when the Oak Creek District was voted in and Frank took office, he knew little about soil conservation. On being elected supervisor he pitched right in and found out what his duties were and how a soil conservation district should function.

Gyberg doesn't pretend to be a farmer. He has about 15 acres of irrigated land but he has planted that to permanent pasture.

"I'm not saving this farm for myself," says Frank. "There's too much work on a farm—I'm

saving it for my neighbor's kids!" He makes his living from a herd of whiteface cattle which he runs on adjacent range land of State leases and National Forests.

Frank and Louise have no children but they practically adopt all the kids in the Verde Valley. Mrs. Gyberg teaches them music. Every few months the children give a concert.

Gyberg devotes much of his "spare" time to community drives for such causes as savings bonds, the Red Cross, the Salvation Army, the raising of money for local hospitals and iron lungs. This past year he has taken on something entirely different. He is acting instructor for a class of 12 former GI's who are taking "on-the-farm training" to learn how to farm and ranch. Frank covers the whole field—all the way from soil conservation to how to tie *hondo logos* in the end of a lariat rope. The class is gaining widespread attention. His mail comes addressed to "Dean Gyberg, of Cornville College."

As regularly as every other Saturday rolls around, you will see "Gyberg's Gripes" in the *Arizona Farmer*, the only farm magazine published in Arizona. In this column Gyberg usually philosophizes about something pertaining to his ranch or to his wife. Quite a number of subscribers have told the editor that the main reason they take the paper is to read "Gyberg's Gripes." In their letters they refer to Frank as "The Sage of Cornville."

Last year the six districts in Yavapai County sponsored a school essay contest on soil conservation. A fund of \$1,000 was distributed to the winners. Gyberg was one of the key men in this undertaking.

This year, through the efforts of Gyberg and D. H. Dickinson, secretary of the neighboring Bridgeport Soil Conservation District, a successful "Remaking a Farm in a Day" demonstration was carried out on April 27. This was on the farm of R. G. Hardgrave, a pupil of "Dean Gyberg."

No telling what Gyberg and his energetic fellow supervisors will be trying next. But, with all their enthusiasm, interest, and ability, they'll be tackling other big jobs soon. Maybe nothing as spectacular as the essay contest or the farm demonstration, but something equally as effective in getting people to think and live soil and water conservation.

—JOHN D. FREEMAN.





# Land Facts

The Guthrie station, together with its nine companion stations, laid the research foundations for the new pattern of agriculture.

By **HUGH BENNETT**

**A**T THE EIGHTH annual meeting of the Friends of the Land in Oklahoma City early in October 1948, Superintendent Harley Daniel asked me to visit the Red Plains Soil Conservation Experiment Station, near Guthrie, Okla. It was just what I wanted to do.

We drove up immediately after the meeting. The visit was on the order of a homecoming. I had not been on the station for more than a decade, although it was the first comprehensive soil conservation experiment station to be established in all the experience of man. Moreover, it was the first of 10 such experiment stations established as a result of the adoption by the Congress of the Buchanan Amendment to the Agricultural Appropriation Bill in 1929.

From these 10 stations came the bulk of the basic scientific erosion information that was available

when the world's first action program of soil conservation on agricultural land got under way on a national scale in 1933, in the form of the program of the Soil Erosion Service.

I helped with getting this and the other stations into operation, and had general charge of them for several years. There was not much money to work with in the beginning. The Chief of the old Bureau of Chemistry and Soils had given \$40,000 of the \$160,000 of Buchanan Amendment funds to the Forest Service, and half of the remainder to the old Bureau of Agricultural Engineering. The financial situation was difficult from the start.

One of the things the Amendment called for was the determination of rates of soil and water losses from different types and conditions of land, under different methods of land use and over a wide range of climate. First it was necessary to determine with the utmost accuracy the amounts of soil and water that were being lost from measured



areas of definite types of land used for various purposes. Measurements were made after every rain. The plots had to be so safeguarded that the measurements would cover only the effects of rain falling on the plots. Each plot was steel-encased, except the lower end. At the open lower ends cement tanks were installed to catch every drop of water and every particle of soil coming off the plots. This is the way we measure the effects of erosion and the loss of rainfall.

In order to put in catchment tanks of adequate size, it was necessary to make at the lower end an excavation about 8 feet deep, 60 feet long, and 15 feet wide.

Three of us were at the station when work started. We were enthusiastic and ready to go. The hole was dug forthwith; we saved about \$500 of taxpayers' money by doing the digging ourselves. By the time the hole was finished we were all pretty sore, especially in the back. Even now, whenever I hear someone talking about soil 40 feet deep, I instinctively wonder—"where?" Of course, there isn't, and probably never has been, any such depth of soil, not even in the narrow strips of alluvium along the rivers of the world. Those who have not looked below plow depth (about 6 to 8 inches, generally) sometimes assume that topsoil keeps going on down as they see it at the surface, not suspecting that most topsoil goes into subsoil generally at depths ranging from about 3 to 15 or 18 inches and that subsoil is commonly underlain by rock or softer soil-forming material at depths ranging from around 2 to 10 feet—that is, over the uplands of the world (comprising probably not less than about 92 percent of all the agricultural land on earth).

The "40-foot depth of soil" is merely an expression for deep soil.

At any rate, we struck rock at about 3 to 4 feet, leaving nearly 5 feet to go—and that through hard Permian sandstone! Tediously we dug through it with picks—and calloused hands, very sore backs, and some disgust over the greediness of nature toward the development of soil depth.

You don't forget things like that.

More important, the grass-covered plot at the station, over an 11-year period of operation (1930 to 1940, inclusive), lost only 0.22 ton of soil per acre, along with an annual loss of 0.9 percent of the precipitation; while the corresponding bare plot and the continuous cotton plot, alongside, lost 241 tons and 181 tons of soil, respectively, for the

11-year period, along with 27.0 and 11.4 percent, respectively, of the precipitation. Cotton grown in the cotton-wheat-sweetclover rotation lost only 99 tons of soil for the same period, along with an annual loss of 10.07 percent of the precipitation.

As an example of the practical value of this kind of information, look at the water saved from the 5-inch rain at the Red Plains station during the afternoon and night of June 22, 1948. The water stored in the soil had value for plant growth and, of course, it didn't run off the land immediately as so much waste water, adding volume to floods and eroding the soil on its way. The table below gives some idea of what soil conservation means—what it can do:

*Rainfall stored in soil at Guthrie, Okla., station*

Land condition and use, slope 7.7 percent	Percent of rain of June 22, 1948 (5.08 in.) stored in soil
Exposed clay subsoil, continuous cotton.....	23.2
Land bare of vegetation, much topsoil removed by erosion.....	42.3
Land used continuously for cotton, some topsoil removed.....	56.3
Sweetclover stubble-mulch on topsoil, very little erosion.....	91.8
Bermuda grass sod on topsoil, practically no erosion.....	98.2

These are just a few of the many fundamental determinations relating to rates of soil and water losses from various slopes used for various crops that have been made at this station. In addition to these determinations, numerous others have been made, such as the soil- and water-holding efficiency of land terraced with terraces of different length, gradient, and distance apart; and the efficiency of contouring, strip cropping, mulching, basin-listing, crop rotation, grazing according to carrying capacity, and so on.

More than 25,000 measurements altogether have been made at this station, and nearly 300,000 altogether at the 10 stations established with funds provided by the Buchanan Amendment and subsequent legislation.

On one large area of formerly cultivated land, which had been ruined for any further practical cultivation by erosion (all topsoil washed off, with many gullies which had cut down to bedrock) 50 pounds of beef per acre were produced in 1948. This land has been improved by reseeding to grass (little bluestem), mulching with rotten hay and mowings, and grazing according to carrying capacity. When I was at the station the last time previously, 110 acres of this severely eroded land was offered for the use of the station for payment



of the taxes—\$18 for the entire 110 acres. The station superintendent had refused the offer, saying it was not worth that much—not even 16 cents an acre!

Later, however, the eroded tract was leased for \$30. It was improved and has been used quite profitably for beef production. The 50 pounds of beef per acre which it produced in 1948 brought in, the prevailing price of 23½ cents a pound, \$11.75 per acre. The cost of production was very low, probably not over \$3 per acre.

Still other profitless tracts of scrub oak land have been leased by the station and put into production under the guidance of careful research. Tracts of such scrub land where nearly all grass had been shaded out were cleared of the scrub growth by treatment with 2-4 D. The first year following such treatment heavy stands of little bluestem and big bluestem grass came in. These reclaimed areas produced 90 pounds of beef per acre this year (1948) at a cost of \$6.50 per acre, thus giving a profit of \$14.65 per acre. Go back to the price of beef when this land was leased—around 8 cents a pound—and the profit still would be around \$4 per acre.

I saw many nice pastures and hay lots in the scrub oak-post oak section between the experiment station and Oklahoma City, which had been cleared according to methods worked out by the station.

Thus research is being translated directly into action on the land by the farmers of the region, operating in soil conservation districts, with the technical assistance of the Soil Conservation Service.

Altogether there are in the 36 million acres of Red Plains country in Oklahoma, Texas, and Kansas probably 12 million acres, at least, of scrub oak and brush land now producing little or nothing, which could be turned to good use, as needed, in the production of beef cattle and dairying. Ten million acres of this would make enough beef at 50 pounds an acre to give one and a quarter million people a pound a day throughout the year.

This kind of conservation work—that is, putting the results of conservation research to work on the land as soon as we get them—is a part of our great Nation-wide soil conservation program. That makes the country stronger instead of letting it grow weaker by unnecessary erosion and purposeless use of land for growing scrub oak.

This is the kind of research the Soil Conservation Service conducts—that is, the kind that pro-

vides the quickest possible answers to practical soil conservation questions which our technicians run into in helping farmers safeguard their eroding lands and make the best use of their lands. Occasionally someone who doesn't understand, recommends that the Service let other agencies do its research work. We do cooperate with other agencies in our research work, particularly with the State experiment stations. I am convinced, however, on the basis of experience that other agencies would never fully understand our continuous, pressing and sometimes immediate needs. Nor would they entirely appreciate the teamwork we have found necessary to get new and vital information quickly out of the test plots and onto the farms and ranches where it belongs. The divorce-ment of original research from its practical application on the land would result in slowing up the whole soil conservation movement, at terrific cost to the farmer and the Nation.

The affairs of our Nation-wide research program are progressing splendidly—to the extent of very materially aiding the action program of the Service.



**TERRACES HOLD FERTILIZER.**—José Pinto Pupo, a trainee with the Soil Conservation Service in 1946 and 1947, writes from Baurú, Brazil: "I am sending you some pictures of small terraces that were made this year after a hard rain. The results of this type of work on coffee plantations have been very good. The first year, the trees improved very much. The second year, production increased 20 to 30 percent. A farmer who has 3,000 coffee trees told me that those growing near his terraces look much better than those which have been fertilized but are not on terraced land."

**DONGA, DONGA, DONGA!**—Dr. M. Wilman, formerly director of the McGregor Museum, Kimberley, South Africa, writes: "The September number of SOIL CONSERVATION has just arrived and I am very glad to have it. I find it so useful both for myself and for my friends. We are trying so hard to get on with soil conservation but our world is so full of slackers. They see nothing but a donga (gully) while our valuable soil is blowing away."





## CONSERVATION *in the*

# Brandywine Valley

A projector tells the Brandywine story convincingly to young and old.

**A community looks at its dwindling supply of natural resources and decides to do something about it**

By **ROBERT G. STRUBLE**

**O**NE hundred and ten applications for soil conservation plans in 6 weeks! That's the amazing record of the newly organized soil conservation district in Chester County, Pa.

"It's a regional and perhaps a national record for the speed with which conservation plans have been requested," says Austin L. Patrick, regional conservator of the Soil Conservation Service.

Who is responsible for this tremendous demand for conservation in Chester County? According to Tom Harney, prominent farmer and chairman of the board of directors of the district, the teachers of agriculture and instructors of veterans on

the farms have done much to interest farmers in soil conservation, and the county agents with over 200 demonstrations of contour farming have proved that soil-saving practices pay. Harney says that the other district directors, Paul Coates, Albert Palmateer, Herbert Crossan, and Howard Way are doing a bang-up job of interesting local farmers.

"But one of the biggest reasons for this unusual display of interest in conservation," he points out, "is that there is an independent conservation agency in Chester County, called the Brandywine Valley Association, organized specifically to create *interest in and a demand for conservation.*"

The best way to see how the Brandywine Valley

NOTE.—The author is a staff member of the Brandywine Valley Association, West Chester, Pa.



W. Martin Muth, SCS technician, and Jack Tingle, GI farmer and first Chester County applicant to district for conservation plan. GI farmers have submitted one-quarter of the applications.

Association has aroused enthusiasm for conservation is to attend one of its illustrated lectures.

With a brief introduction stating that most people believe there is no soil erosion in a rich land like Chester County, the speaker invites you to take a trip around the county, especially the area drained by the Brandywine Creek, to see for yourself if conservation is really needed. On this trip you never have to get out of your seat for the

Farm forester and Association staff man instruct GI farmers in principles of woodlot management.

Brandywine Valley is actually brought to you by means of natural color slides.

The first picture shows a map of the Brandywine watershed. It tells you that over 200,000 acres of land are drained by this stream which originates in northern Chester County, Pa., and flows through New Castle County, Del., and into the Delaware River. Emphasis is on the fact that the problem is a *watershed* problem. Every branch stream going into the Brandywine must be controlled—then the main stream will control itself.

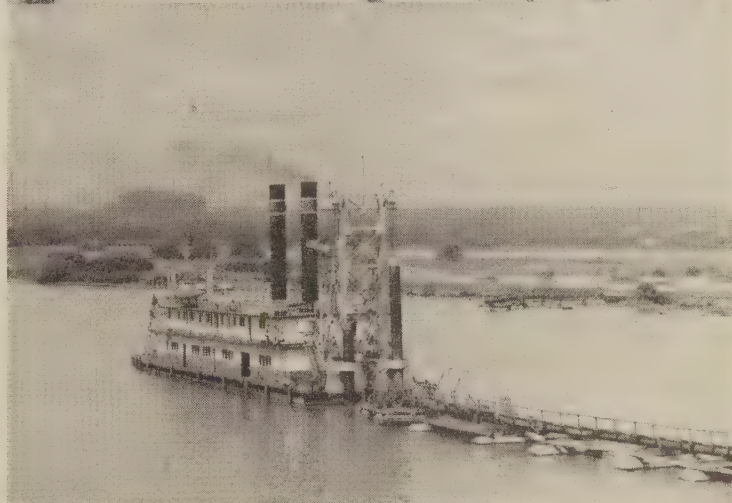
U. S. Engineers dredge more than 1,000,000 cubic yards of silt from mouth of Brandywine and Christina, at annual cost to taxpayers of nearly \$200,000.

In pictures the watershed is put together piece by piece. Beginning as a sparkling spring the main stream is formed by branch streams that flow into it. Then the beauty of the Valley unfolds before you: Old covered bridges, stone farmhouses, little villages, quaint old Meeting Houses—still used by the Society of Friends or Quakers—big cities, old powder mills, and the world's largest plate mill, Lukens Steel at Coatesville. Finally

This, the world's largest plate steel mill, depends on the Brandywine for water.

you see high-producing herds of dairy cattle, thousands of acres of lush green grass, and fertile farm land.

Then the words, "Last year some of our farmers in the Valley grew over 100 bushels of corn to the acre. The average American farmer gets only 35. Here is some of the best land in the world. But





look what's happening to it!" You stare into a gully 10 feet deep, then another, and then you see a whole hillside with most of the precious topsoil washed away. "All that soil was lost in one rain last August."

If you love the land, you have an empty feeling in the pit of your stomach as you look at that picture. The narrator continues: "That may not be your field, but it's costing you a lot of money—in a lot of different ways."

You see the rich soil that left the farm appear as mud in the Brandywine. With additional colored slides you are shown a road scraper shoving the mud off the highway. "Your road-tax money is being spent to push this man's topsoil out of the way. It will never grow any corn out there." Then you see some of the mud going into the Wilmington Water Works. "That mud doesn't improve the taste of the water nor does it cut down the water bill." Here you realize that the farmer and the townspeople have a common problem.

"Most of that topsoil goes on down the Brandywine until the water slows down at the Wilmington Marine Terminal, then the mud settles out." As you glance at a big ship anchored there the speaker continues, "And that same mud fills up that channel at the rate of 12 feet a year. To get the mud out, the U. S. Engineers send in a dredge."

"That's a pretty picture," somebody comments. And the narrator quips, "Yes, and it's costing you a pretty penny so you might as well enjoy it." Somebody laughs a little until he hears, "When you pay your income tax you are paying your share of \$168,000 it costs to scoop that mud out of the channel."

"How much mud do they take out?" somebody inquires. "Over 1,000,000 cubic yards per year—enough to cover 1,000 acres 7 inches deep." Before someone can ask what happens to that good soil, you see the Cherry Island Marsh being filled with the once-precious topsoil. "No, it never goes back to the farm. Now it grows ragweed instead of corn."

"It is estimated that 500,000 tons of soil go down the Brandywine each year but we are going to get the exact figure. With the cooperation of the United States Geological Survey and the New Castle County Soil Conservation District, a flow-gaging station has been erected on the lower Brandywine to measure the amount of water going down the stream. And this silt-gaging station determines how much silt or soil is in the water.

With the measurements from these stations we can tell how much soil is lost after each rain."

"What have you found out so far?" asks a farmer in the audience.

"Only that on November 4, 1947, during a heavy rain, 13,600 tons of soil went down the Brandywine," is the reply.

"What a price to pay for 1 day's rain!" the farmer exclaims.

"In a few years we hope to prove we can reduce that terrific loss by getting more of our 2,000 farmers in the watershed to adopt soil conservation practices," the lecturer explains. Then he shows a series of pictures to illustrate how the soil conservation technicians have developed complete conservation plans on some of the farms in the valley. Each phase of the plan is vividly portrayed with "before and after" pictures and you get the feeling that there are two important benefits to soil conservation: First, it is practical; second, it pays.

Departing briefly from soil erosion, the program goes into the health and recreational aspects of conservation. To emphasize that the two are interdependent, the speaker shows how muddy water causes poor fishing; how oil from the steel plants



Sediment sampler at Henry Clay gaging station being examined by V. R. Bennion, of the Geological Survey.



and gray-white waste waters from paper mills have created an ever-present "No Trespassing" sign for the boys and girls who would like to swim in the creek; and how raw, untreated sewage pouring into the stream and the rubbish dumped along its banks have turned the once-beautiful stream into an open sewer.

"This is an appalling condition! But let's look at the good as well as the bad." Now you see a series of "after" pictures showing how some industries and towns have cleaned up their waste waters. Emphasis is placed upon the fact that in many cases the industries, through the installation of treatment plants, *have saved money* by reclaiming solid materials that formerly went into the stream. "Although there is a clean-streams law in Pennsylvania that makes waste treatment compulsory, there are not many streams where progress in pollution elimination has been so rapid as along the Brandywine." You get the feeling that the educational program in the Valley has done much to supplement the legislative action and the net result has been good for all.

The climax of the program comes with a picture trip around one of the farms that has been renovated by good use of conservation practices. By the use, again, of "before and after" pictures you see how an abandoned farm was transformed into one of the most profitable ones in the Valley by the adoption of conservation measures. "Corn yields jumped from 25 bushels per acre in 1938 to 101 bushels in 1946; barley from 30 bushels to 80 bushels per acre; and by good pasture management this farm now produces 5 times as much beef per acre as it did in 1938. It's the best evidence we have that if we take care of the land, the land will take care of us," the speaker concludes.

The pictorial presentation nears the end with a gruesome summary of all the things that are wrong with the Brandywine, yet ends on a high note of optimism. It points out that the job of conservation in the Brandywine Valley can be done, and on time, if farmers, townspeople, and businessmen will join hands in common cause to save the land. The final plea of the speaker is, "We need your help!"

During the question period that usually follows the program it is not uncommon for somebody to ask just how he or his organization can help. For any organization, staff members can offer a list of activities designed to aid in the total conservation program: Send a teacher to the conservation work-

shop. Conduct field trips to see first-hand what is going on. Put on a campaign to reduce grass fires. Encourage people to look at wild flowers and enjoy them and leave them there for others to enjoy. Promote legislation in Delaware to end pollution. Above all, practice conservation on the home farm. Those are a *few* of the suggestions—and the last one is the most important.

How effective has this illustrated lecture been in selling conservation?

"We don't know the answer," says Clayton Hoff, executive vice president of the organization. "We have no exact way of measuring results, but in New Castle the soil conservation district supervisors credit us with having sold one-third of their 162 cooperators on the need for soil conservation plans. Recently after showing our pictures at a parent-teacher meeting, three farmers asked for applications for farm plans. We consider our presentation unsuccessful if we don't get at least one applicant after each program."

The illustrated lecture, however, is only one of the many methods used to create interest in conservation. For more than 2 years now every landowner in the Brandywine drainage area has been receiving numerous booklets and articles on soil conservation from the Brandywine Valley Association. These farmers have also read, or at least have been exposed to, numerous newspaper and magazine articles dealing with the wise use of natural resources. On the first Thursday of each month they may hear a radio program about saving soil, or they may see an exhibit at farm shows or a poster display in a store window—all part of the Association's educational program.

And the young folks aren't overlooked, either. A farmer's son may come home from school with an application for a conservation plan. "Dad, I'd like to have you sign this," the boy will say. "You see, our Future Farmers of America Chapter has entered a conservation contest. Our chapter can get a \$50 prize for first place and I can get a free trip to the USDA Experiment Station at Beltsville, Md., if we do enough conservation work on our farm this year. But whether I win a prize or not, it's just good business to save our soil."

Dad usually signs the application.

This FFA boy is representative of 200 in Chester and New Castle Counties who participated in the conservation contest last year. Bankers in New Castle County donated \$1,200 for prize money for 4-H and FFA boys. "It earned big divi-



dends," claimed William K. Pennington, president of Rural New Castle County Bankers' Association. In Chester County the Brandywine Valley Association contributed \$500 in prize money. These contests resulted in conservation practices being put into effect on 10,000 acres. Both contests are continuing this year—and with greater enthusiasm.

Who pays the bill for this intensive program of conservation education? *The people of the Valley!* By private contributions and membership dues they provide the funds for the Association's numerous educational activities. More than 500 persons living in or interested in the Brandywine Valley have voluntarily joined the organization and supported its activities.

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## NORTHEAST

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**CEMETERY SPEAKS.**—Joseph W. Robson, seedsman at Hall, Ontario County, N. Y., took some friends to a family burial ground in the nearby town of Seneca. Within a well-kept iron picket fence on top of a small hill they found memorial stones dating as far back as 1813. Farm land on all sides had been tilled for a long time, probably two or three generations.

Topsoil within the cemetery is 24 inches above the tilled soil in surrounding farm lands. This is 1 inch less in surrounding land for each 6 years since the first burial 135 years ago. No one knows for sure that the cemetery was anything but level with adjacent soil at the outset.

Photographs of one field close to the cemetery show small rills, or sheet erosion, in 1948. Corn yields in this particular field were much less than in nearby fields having the same soil types, same seed, same fertilizer and probably the same rainfall.

George C. Moore, district conservationist, Penn Yan, N. Y., who accompanied Robson, said what they observed "is silent testimony rendered by man for all to see, that we do have soil erosion, and plenty of it, on some of our best soil types." Such evidence emphasizes what is happening to our sloping lands, and that the land does not have to be steep for these things to happen.

**CONSERVATION ON MARTHA'S VINEYARD.**—"Martha's Vineyard and agriculture? That's news to us. We never saw or heard anything about agriculture when we were there," most of the 60,000 people who annually visit Massachusetts' famed vacation and fishing island undoubtedly would say.

But had they been there a certain day last September, they would have learned they had really overlooked something, for on that day agriculture was tops in public interest on the Island, even competing with the famed striped bass contest.

Island farmers have turned to soil and water conservation in a determined way through their Dukes County Soil Conservation District.

On this first conservation farming field day in Martha's Vineyard, more than 200 farmers, other Islanders, and visitors from the mainland flocked to the 65-acre E. B. Keith farm in Chilmark, where men and machines actually applied conservation practices. The field day was arranged by the district supervisors: Chairman Arnold Fischer, John McKenty, and William Pinney.

Keith's visitors saw, usually for the first time, such operations as strip cropping and contouring, the building of diversion terraces, drainage ditches and a farm pond, the

reclaiming of old pasture land that had been permitted to grow up to waste or that had become waterlogged, and a start in reforestation to replace fire losses. School children planted a half acre with seedlings. Some of the old stone wall fences were removed and replaced by a few of a better type on the contour.

The *Vineyard Gazette* commented: "Vineyard farmers have great expectations of the services which their year-old organization, and Ezra Shaw, their Soil Conservation Service technician, will be able to render them."

Picturesque Martha's Vineyard, or Dukes County, takes its name from wild grapes native to the Island many years ago. Its known history dates back to 1602 when the first house was built by a white settler. Prior to 1692 it was a part of New York. The Island is in the Atlantic a few miles south of the western arm of Cape Cod. It is 20 miles long and 10 miles wide, and 22,470 of its 67,840 acres are in agriculture—largely dairying and market gardening.

The Island has a year-round population of 7,000, of whom nearly 300 are farmers. In the summer there is an influx of 60,000 visitors, attracted by unusually good boating and fishing, and the many other forms of entertainment and outdoor activities that go with a vacation land.

—ALVIN C. WATSON.

**HE SAW THE SOIL.**—Leon Mehlenberger, East Springwater farmer, cooperating with the Livingston County (N. Y.) Soil Conservation District, looked underneath the brush and weeds on a semi-abandoned farm. What he found and did about it within 1 year is paying off.

Mehlenberger, Cornell graduate, bought the hillside farm last winter. Its condition was discouraging. There were numerous gullies. Fence rows were overgrown with brush. Little soil was ready for use, but he observed that under the weeds and brush it was suitable for seed-potato production.

Since then, working with a complete conservation plan developed with the aid of SCS Technician Robert H. Walker, he has removed 50 rods of hedgerow to facilitate strip cropping, established 50 acres of contour strips, relocated the farm road, and started construction of a pond to provide water for spraying. Part of the farm, too steep for cultivation, will be reforested. This year Mehlenberger grew 27 acres of potatoes for certified seed.

In a group of 370 farmers cooperating with the district, Mehlenberger was chosen to "carry the ball" in a conservation contest because he has made the most progress in establishing a complete erosion control program.

**CIVIC-MINDED GRANGE.**—There's much enthusiasm for farm ponds in Harford County, Md. The local Grange has completed a pond for Churchville, near Havre de Grace, as a community project. Members provided the site and did all the construction work except for bulldozing. The pond covers one-half acre and is 2 to 12 feet deep. It will be used for community fishing, skating, and fire protection. SCS technicians supervised construction.

**CYRUS HAS FRIENDS.**—One day last October 80 young farmers, training as veterans under the GI bill, pitched in on a 1-day 6-point soil conservation project designed to help a buddy. Neighboring farmers joined in. Some who came to observe, stayed to help. The work accomplished ordinarily would have taken at least 4 days. Equipment was provided by the Wayne County (W. Va.) Soil Conservation District. The buddy was Garland Cyrus, 27-year-old disabled veteran.

In that 1 day the group built a 1,400-foot diversion terrace across a 15-acre hillside tract to protect other fields and a poultry house from runoff, laid out and plowed eight 60-foot strips across the field for strip cropping, sowed grass and permanent meadow mixture on the terrace; constructed a 300-gallon stock-watering tank, prepared and sowed a 3-acre field with wheat and vetch for winter cover crops which will be plowed under in the spring, remodeled and repaired the poultry house, and surveyed a 10-acre timber tract for selective cutting. Men of the Soil Con-



servation Service and the Veterans' Administration directed activities.

Cyrus, 70 percent disabled by mortar shell wounds received in battle near Strasbourg, Germany, joined with his buddies and other friends and helped get the job done. He seemed bewildered by the extent of work accomplished. "It would have cost me at least \$2,500," he said. Most of the veterans brought their lunches. For the others, Mrs. Cyrus and several neighbors prepared a chicken dinner. Cyrus' principal industry is chicken farming.

**TRANSIENT TOPSOIL.**—Runoff from 40 acres destroyed or damaged the crops in a low-lying field farmed by the Jablonski brothers at Bridgehamton, Suffolk County, Long Island, N. Y. When all suggested methods for dealing with the problem resulted in failure, they hit upon the idea of trying to drain the water into the underlying sand and gravel. They hired a crane and dug a catch-basin 120 feet long, 20 feet wide, and 15 feet deep. When heavy rains came, water disappeared in the hole and was quickly absorbed. There was no crop flooding even in August, a record for rainfall.

That was in 1946. In the following years, everything went smoothly until this past summer when another problem developed. In 2 years 7 feet of topsoil had been carried into the hole. This reduced its effectiveness. This past fall the Jablonskis cleaned out the catch-basin and hauled 800 tons of topsoil back to the fields from which it came. They observed that it had been deposited in layers. By counting these and noting the thickness, they were able to determine the number and frequency of storms since the hole was dug.

The Jablonskis believe the plan can be used on many farms where the water table is not high. Beyond service in handling runoff water, they say the experiment has taught them the vital importance of soil conservation. The 7 feet of topsoil has been a mighty powerful object lesson.

**HATCHERIES BUSY IN EMPIRE STATE.**—New York State farmers are taking to farm ponds like ducks to water. A report from the Mohawk Valley says there are 115 farm ponds in Oneida County and 81 in Madison County, compared with 2 to 1, respectively, in 1944. Farmers have built these ponds in cooperation with their soil conservation districts as a practice which assures an ample supply of livestock water, a means of water control and fire protection, and recreation areas and fish production. At Lamar, the *Utica Daily Press* notes, "New hatcheries are being built and old hatcheries repaired in an effort to double the fish output for pond stocking." In 2 days, recently, 57 farmers in the two counties received more than 21,000 bluegills and bass for their ponds.

## SOUTHEAST

**THEY WORKED TOGETHER.**—*Soils, Geology, and Water Control in the Everglades Region*, a new publication designated as Bulletin 442 by the University of Florida Agricultural Experiment Station, is long overdue but well worth waiting for.

This bulletin of 168 pages, complete with a pocket of color maps, is distinguished for its comprehensive treatment of basic material and for its fine example of agency cooperation. No better example has come off a printing press of what can be done when major forces pinpoint a problem and join wholeheartedly in its analysis. The bulletin was prepared under the direction of Lewis A. Jones, chief of the division of drainage and water control, Soil Conservation Service, but it represents equally the thinking and sponsorship of the Florida station, the U. S. Geological Survey, and the Everglades Drainage District.

Bulletin 442 lays a fundamental and integrated basis for the program of water control and utilization in the Everglades. The historical and scientific background is

included, together with an outline of control works contemplated, probable costs, and recommendations for land use and management. It is rounded out by bibliography and numerous acknowledgements.

—W. B.

**SOIL CONSERVATION SALESMEN.**—The soil conservation program must be sold to *everyone*—ourselves, district supervisors, farmers, and the general public. This was the theme of a talk made by Hugh J. Dowdle, district conservationist of Denmark, S. C., recently before a State meeting of Soil Conservation Service workers at Clemson College, Clemson, S. C.

Dowdle advocated the use of time-tested sales methods. "We first must sell *ourselves*—the people whose job is to help farmers plan and apply complete soil and water conservation programs," he said.

To do so, SCS workers must realize that they have the best possible product to sell; and that they should know this product from A to Z. They must do their job in a professional manner, use good judgment and common sense, and be enthusiastic.

"District supervisors must be sold on the district program both as farmers and as a governing body," said Dowdle. "Helping them to see and understand the problems of the district, to make decisions and determinations that will lead toward solving these problems, and to enlist the active support and help of those able to assist, is an important job we cannot fail to do."

In selling farmers, he urged that the district be kept in the limelight. The use of testimonials and experimental findings, field studies of complete plans successfully applied by other farmers, illustrations and photographs, and the group approach were methods recommended.

Local newspapers were considered the most useful medium for telling of conservation activities and farmer experiences that would sell the district program to the general public. Other ways listed were: Getting information before civic clubs and schools, using appropriate picture displays in bank lobbies and cross-road stores, field studies for business people on individual farms where land use and conservation practices have been applied successfully.

"Most important of all is that each of us do a good, thorough, complete job. If this is done the farmers and others will help sell our product."

**URGES SUPERVISORS TO ACT.**—Soil conservation districts have not accomplished as much as they might because district supervisors have placed or allowed to fall on Soil Conservation Service employees responsibilities and duties that the supervisors themselves should assume, according to A. T. Minchew, supervisor of Georgia's Satilla River Soil Conservation District.

Minchew, speaking to a group attending the Conservation Short Course at Abraham-Baldwin College in July, said, "We have not realized or given proper recognition and publicity to the fact that the soil conservation district and the Soil Conservation Service are two separate and distinct organizations.

"The Soil Conservation Service is a Federal agency that has rendered great assistance to the districts in carrying out their programs by furnishing trained technicians to help apply practices that the supervisors think beneficial. The employees are here, however, only at the request and invitation of the district supervisors, and can do only those things authorized by the supervisors of the respective districts."

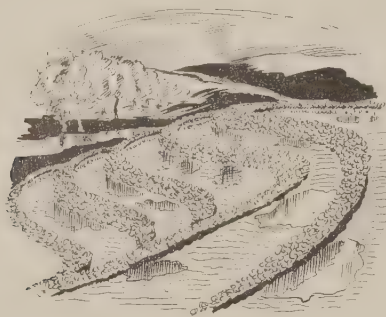
**RE: WHY WASTE WOOD?**—McIntyre's "Why Waste Wood?" in the November issue of *SOIL CONSERVATION Magazine* stirred up phenomenal interest. Reprints are available in limited numbers. Requests should go to William L. Robey, Printing and Distribution Unit, Soil Conservation Service, USDA, Washington 25, D. C.



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## UPPER MISSISSIPPI

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**TRAPPED ON RIDGE TOP.**—"Terraces certainly keep water from moving off high flat ridge tops and down steep side slopes," reports Ted Johnk, cooperator with the East Pottawattamie (Iowa) Soil Conservation District.

"By preventing this movement of water, my soil has been kept on the hill where it belongs."

This is the first year that Johnk has gone into the extensive use of mechanical aids to assist him in soil and water conservation. Early in 1948, he constructed a 1-mile terrace which protects 25 acres of land. All of his row crops are planted on the contour.

In May a 3½-inch rain fell on Johnk's farm in 30 minutes. All of the rain falling on the ridge top was trapped by the terrace. This eliminated severe soil, water, and fertility losses.

Johnk said that it has long been known that floods start at the top of a hill. He added that if all the farmers within the area of the May rain could have had their hilltops terraced and their fields contoured, the flood on Graybill Creek would have been cut down considerably.

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**CONSERVATION FIELD DAY.**—Nearly 5,000 people attended the First Southwestern Illinois Conservation Field Day held on the farm of O. W. Niermann near Carlyle in August.

Tents were set up, a public address system was installed, and implement dealers displayed many types of farm machinery and equipment. Terrace outlet construction was explained by William Culpepper of the Soil Conservation Service.

At noon an address was given by Prof. J. C. Spitler, associate director of Agricultural Extension, University of Illinois. The men's quartet of the University of Illinois sang; and Monsignor George J. Hildner from Missouri, Mr. Sherrill, president of the Farmers Club of St. Louis, and Hugh Steavenson, secretary of the St. Louis Chamber of Commerce were introduced.

During the afternoon, C. A. Kincaid gave a talk on the "Missouri" type flume which was being constructed.

One of the main events was the contour plowing contest. Prizes were announced by the Honorable Arnold P. Benson, State Secretary of Agriculture. The winner of the first prize, a bronze plaque and \$100, was a contestant from Fayette County.

—IRMA M. NOLD.

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**KNEE DEEP IN PASTURE.**—When a group of 25 bankers and businessmen visited the Lyle Ahrensmeyer farm in the Sauk County (Wis.) Soil Conservation District recently, he gave them an emphatic account of the value of soil conservation farming. He led the group up the hill away from his well-kept farm buildings and stopped at a field fence to say:

"See my cows over there knee deep in pasture. That's some of my alfalfa, brome, and clover mixture that I don't need for hay. That's my rotation pasture which has old and new strips of seeding in it. Now look at the

bluegrass where you stand. There isn't much there is there? It shows how much more crop we can have if we lime, fertilize, and seed our land to legume-grass mixtures." Ahrensmeyer showed the group an excellent renovation on which the ground had been prepared last fall and reworked this spring.

"When I first moved to the farm," he continued, "it was badly worn, having been cash rented and farmed hard. Something had to be done and 7 years ago I started on this conservation program. Since that time my barn has been enlarged and I now fill it with hay alone. Not only am I raising two to three times more feed but the farm is paid for and I feel pretty good knowing that my fields aren't going to wash away as long as I have good seedings and good pasture."

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**SHOWING 'EM IN "SHOW-ME" STATE.**—Out in Franklin County, Mo., 255 farmers will soon be telling the world that they are cooperators of the Soil District of Franklin County as a result of action taken recently at a meeting of the district governing body. The board awarded cooperators honor posters made of a durable weatherproof material which will be placed at the farm gateway or at some other conspicuous spot along the highway.

These posters are being furnished free of cost to the farmers by the district. A small surplus of funds left over from rentals on the district bulldozer is being used for this purpose.

The district governing body also voted to award the same honor poster to all future cooperators at the time their completed farm conservation plan has been approved.

In a newspaper release published at the time the award was announced, the Right Reverend Monsignor George J. Hildner, V. F., chairman of the Franklin County district board, issued a general invitation to all farmers of the district urging them to cooperate in the complete program. Organized in 1944, the Franklin County district has 3,400 farms. In addition to the 255 district cooperators, there are approximately 1,700 farms on which the owners have applied one or more individual soil conservation practices in cooperation with the PMA program. The district is urging these farmers to expand their individual practices into a complete farm conservation plan which will reduce runoff, control soil losses, and put every acre to its best use according to its capabilities.

William C. Shotwell is district conservationist and Glen E. Burk, work unit conservationist.

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**STAYS WITH CORN.**—Soil conservation really has made a lot of difference to Carl Hollman, a cooperator with the Allen County (Ind.) Soil Conservation District. It has not only checked erosion, increased yields and income, but also saved him from being forced to change his type of farming.

Two years ago gullies were carrying his best soil away to St. Mary's River. One gully had split a field so he couldn't farm it as a unit. He had about decided to quit corn and start a grassland type of farming.

Then he developed a farm conservation plan with the help of Glenn Poe, SCS work unit conservationist. He planned to use the land according to its capabilities. Some of his land is practically level but much of it needs terraces, contours, cover crops, and grassed waterways, as well as good rotations and fertilizers.

Terraces stopped most of the washing and some of the gullies were prepared and seeded to permanent waterways. Cropland has been arranged in five fields of about 15 acres each, which are farmed in 5-year rotation. One of his terrace systems enabled him to continue farming a field which otherwise would have had to go for hay. This enabled him to continue raising corn.

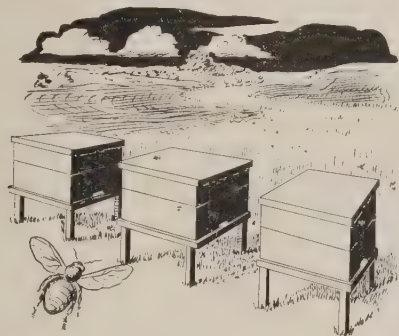
Hollman says that he is well satisfied. He is getting more of each crop, has more feed from his renovated pastures, can continue to grow the crops he prefers, and finds his soil still in place after each rain.



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## WESTERN GULF

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**BUSY BUZZERS.**—Fifteen billion workers for Texas soil conservation! Bees!

At least that might be a popular interpretation of the resolution passed recently at the annual meeting of the Texas Beekeepers Association.

Addressed to Waters Davis, chairman, Association of Texas Soil Conservation District Supervisors, the resolution stated that the beekeepers are concerned over the damage being done to Texas agricultural resources by soil erosion, that they feel beekeepers have a contribution to make by providing pollinating services for soil-conserving plants, that they are interested in working with soil conservation districts for mutual interest, and that they favored State and Federal legislation which would support and strengthen soil conservation district activity. The resolution was comparable to one passed early in 1948 by the National Beekeepers Association of Salt Lake City, Utah.

One of the principal speakers was Philip F. Allan, chief of the regional biology division, Soil Conservation Service, who revealed that during 1946, in seven of the State's 148 soil conservation districts, more than 80,000 acres of vetch, Hubam, and Madrid clovers had received pollinating services from beekeepers, with yields increasing from 100 to 200 percent, and in many cases even more.

An increase of 170 pounds of vetch seed per acre was attributed to bee pollinating services by Bill Cunningham, of Greenville, Tex. The use of only four hives of bees on the 23-acre field of hairy vetch and barley on the Harry Rogers farm near Tulia was equally significant. Near the hives almost 90 percent of the seed combined was vetch, while at the other end of the field the yield was 90 percent barley. The over-all yield of vetch was 75 percent more than in the previous year.

**SOUND ASSURANCE.**—Whenever the supervisors of the Denton-Wise Soil Conservation District in north central Texas want to show sound movies on conservation subjects to groups of farmers, businessmen, or students they will no longer have to beg, borrow, or steal a sound projector. They now have their own.

Recently the supervisors learned about a \$200 sound projector on sale at a Fort Worth store for \$178.50. They quickly sent a fleet-footed emissary off to buy it. Now they can show sound movies on soil conservation subjects whenever and wherever they want to. Of course, they have to have the movies, but they're easy to get in comparison with a sound-projecting device.

**PRIZES FOR LEGUMES.**—The Saline Soil Conservation District, in northwest Louisiana, is conducting a contest to stimulate the use of winter legumes. The district will award first, second, and third prizes of \$50, \$35, and \$15 to contestants planting at least 5 acres of Austrian winter peas, hairy vetch, Dixie wonder peas, Singletary peas, or some other winter legume.

Entries are to be judged early in March. Prizes will be presented at a district-wide meeting at Ringgold.

**GETTING RID OF BRUSH.**—From July 1, 1947, to October 1, 1948, the Soil Conservation Service research station at Guthrie, Okla., received 313 letters of inquiry about the control of brush on farm and ranch. Brush control is one of the station's research projects. The station is in charge of Harley A. Daniel.

The letters came from 47 States and four foreign countries. The only State not represented in the correspondence was New Hampshire. One letter each came from Guatemala, the Territory of Hawaii, the Territory of Cuba, and three from Canada.

From Oklahoma came 133 letters; Texas, 29; Missouri, 25; Ohio, 20; and Kansas, 11. They were the four highest States.



Left, Harold. Right, Hartzell. (We think.)

**DOUBLE EXPOSURE.**—Identical twins in the Fort Worth regional office of the Soil Conservation Service have confused their friends over the years. Dr. Harold L. Dean is chief of the cartographic division. Dr. Hartzell C. Dean works on flood control.

Recently, Harold went to a strange barber shop for a haircut. A little later Hartzell went to the same barber for a haircut. The barber couldn't understand how that hair had grown so fast!

The Deans are products of Iowa State College. They joined SCS the same week in 1935. Harold has a boy, 10, and a girl, 5. Hartzell has a son, 13, and two daughters, 10 and 7.

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## NORTHERN GREAT PLAINS

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**GRASSY ACRES.**—Ben Nedrebo uses grass in his crop rotation. He finds that the income from grass seed, livestock, and improved crops adds materially to his profits. Ben farms 1,200 acres near Argusville, N. Dak. He is chairman of the board of supervisors of the Rush River Soil Conservation District.

"We keep some cattle," he says. "We make something off them but that isn't the main reason we have them. We figure that the crops that follow grass and livestock make grass a paying practice. What we get from the grass seed and livestock just make it that much more profitable."

Nedrebo's conservation plan includes crop residue management and improvements in the farm drainage system. The farmstead windbreak, started 20 years ago, is the



second in the same place. The first was planted when the land was settled and had outlived its effectiveness.

Nedrebo's system provides 200 acres of grass for grazing each year and 200 acres more grass seeded each spring. It's a short rotation, 3 years, using meadow fescue only. He usually gets some seed the first season, grazes the grass the second season, plows it up the following spring and seeds another 200 acres to grass. Some years he also gets seed from the land being grazed. Seed can be taken off around July 10. The field is then grazed the balance of the season. This grass is left on the field from 2 to 3 years and then plowed under.

"Getting grass roots into the soil is one of the best things we do," Nedrebo said. "It keeps this heavy soil in good condition, easier to work and able to take in water and hold it better. And the grass roots and the manure the livestock leave do much to keep up the soil fertility.

"This shows up best on the home place, where the grass rotation has been used for many years. The soil is mellow and easy to handle. It will not blow easily. And crops are better and less affected by the weather. We can count on good crops there, even in rather dry periods."

Last spring, Nedrebo tried stubble-mulch tillage on half of one field of wheat. During the wet weather, the water soaked readily into the stubble-mulch-tilled land. On the plowed section of the field, water stood on the surface a long time.

### ONE LITTLE WATERSHED—AND THEN ANOTHER.—

Because of conservation on land drains, a small, intermittent creek through the Harvey A. Whitehead farm near Syracuse, Nebr., hasn't made any headway in filling the channel with silt above three concrete drop structures. Instead, water in this little watershed is kept under control from top of slope to mouth of creek. As much of the water as possible is saved on the land for grass and crops. Any excess has to creep slowly to the creek, instead of sloshing along kicking up soil. In the creek, the water is still under control because of the structures.

This, in miniature, is the watershed and small tributary flood-control program for the whole Missouri River Basin.

"I can see the difference in the way the creek acts," Whitehead explains, "because part of this farm was my dad's and I've lived here all my life.

"When we were kids, we used to run down to the creek after a rain. It would be running full blast. But now, it takes quite a while for the creek to start running even after a heavy rain."

About three-fourths of the watershed and nearly all the creek channel are in Whitehead's 480-acre dairy farm. The upper quarter of the watershed is part of a neighbor's farm, where a conservation program like Whitehead's is in effect.

The measures that control the water so well are the result of long effort. Whitehead, a member of the board of supervisors of the Otoe Soil Conservation District, began work on his conservation plan 12 years ago. Soil Conservation Service technicians helped.

Whitehead's steeper land is terraced and seeded to grass for hay and pasture. The cropland is terraced and contour farmed, with the terraces emptying into a system of grassed waterways. His crop rotation makes frequent use of a grass-legume mixture. Pastures are handled to keep a dense grass cover on the land.

The three drop structures were built in 1946 to control the water after it got into the creek and to stop three overfalls—small waterfalls—from advancing up the creek bed. They were turning the channel into a sizeable gully and water ran fast enough in the creek to erode its bed.

The structures are small concrete dams 2 to 3 feet higher than the creek bed at the overfalls. A concrete apron extends downstream from the bottom of each to keep the falling water from digging into the creek bed.

With the excess water forced to move slowly to the stream and the structures both controlling the overfalls



One of three structures on Harvey A. Whitehead farm near Syracuse, Nebr., built to control overfalls. Upper view is some distance above structure, where channel is stabilizing because flow from watershed is controlled. The watershed is now fully protected by a complete conservation plan.

and holding back part of the stream flow, the creek can no longer erode its bed or banks.

"I think the severest test came last February when we had a fairly heavy rain," Whitehead said. "The soil was frozen, except for a thin layer, so the water couldn't soak in. So far as I could see, my land wasn't hurt a bit. Nearly all of the water ran off because the ground was frozen, but the contour rows in the fields, the terraces, and the grassed waterways kept it from getting in too big a hurry.

"It was quite a bit different on another little watershed not far from here. I saw some fields that were just about cleaned off down to the frozen earth. That topsoil was washed away."

The little watershed where Whitehead lives is one of several that make up the drainage area of a stream that empties into the Nemaha River. Most of the other little watersheds in this drainage are just about as well under control, and it is expected that the work on these will be finished soon. Together they amount to several thousand acres.

The work of farmers cooperating with the Otoe Soil Conservation District is shaping up to control 18 such drainage areas. Farmers and SCS technicians have worked out plans for nearly all of the land in these drainages. In some, 80 to 90 percent of the work of applying the practices has been done. In others, it is as low as 40 percent but moving ahead well.

"Sure, this helps the folks downstream," Whitehead continued, "but it helps us, too. We need this soil to

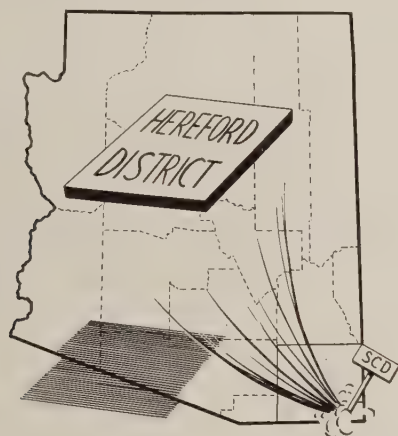


keep on farming. And conservation pays in production. I know my total production is larger. I cultivate less land to get the same amount of crops. But the land I've taken out of cultivation is still producing—it's producing hay and pasture."

When all the little watersheds in the Nemaha drainage are protected in the same way, you'll have about the same situation you find on this little watershed. Soil will be kept on the farms and ranches where it can continue to produce food. It will not become sediment to damage bottom lands and crops, choke stream channels, and silt up flood control dams or reservoirs.

—A. E. McClymonds.

## SOUTHWEST



**LITTLE FELLOW Z-O-O-M-S.**—In the last 18 months the Hereford Soil Conservation District in Cochise County, Ariz., has grown from 1,500 to 2,600 cultivated acres. This growth has been within the original district boundaries and the growth is continuing. The Hereford district doesn't grow by annexing new areas but by leveling waste land and making it productive.

This is one of Arizona's smallest agricultural areas, lying along the San Pedro River in the southeast part of Cochise County and having the Mexican boundary as its south line. In percentage, the expansion is the most rapid in the State. The soil of this area, which is highly productive under irrigation, is attracting farmers. The irrigation water is being obtained from shallow wells which, so far, have shown no signs of serious groundwater depletion.

**"RUINING" FARM PROVES PROFITABLE.**—"You're just ruining my neighbor's farm," commented Ed Nelson, farming in the Hondo River Valley near Tinnie, N. Mex. He was speaking to Tom Utterback, representative of the Soil Conservation Service, as he watched technicians stake out bench terraces for land leveling on a nearby farm.

Nelson's attitude was friendly, but there was no mistaking his meaning. He merely thought soil conservation was "a bunch of plain foolishness." That was in 1945.

In the spring of 1947, after having observed the results of conservation methods on his neighbor's farm for 2 years, Nelson was convinced that he had been wrong. He became a cooperator of the Upper Hondo Soil Conservation District and invited SCS technicians to help him "ruin" his farm, as he put it.

Nelson's 22-acre farm is used to provide supplemental feed for sheep and cattle. About half of the farm was bench-leveled in 1947 and finished up early in 1948. Now Nelson is one of the most avid supporters of soil conservation in the Hondo Valley.

"It used to take me about a week to irrigate, but now I can do so in 8 hours," Nelson says. "I use only half as much water and do a better job. My corn yield has been increased by a third, and my hay crop has been doubled. The hay is more uniform and of better quality."

**PETERSON'S NEW LOOK.**—Five years ago Art Peterson of Bear Creek, Colo., had an eyesore between his house and the highway. This was a 3½-acre tract of rough ground which had become a weed patch.

Petersen asked the Jefferson Soil Conservation District to help him out. A complete farm plan was made which included the leveling of the weed patch. An SCS man did the surveying, and the district provided leveling equipment.

Topsoil was stockpiled and subsoil was moved into the low spots and covered with the topsoil. In one instance a cut of about 5 feet was involved. The leveling cost Peterson \$187.

Then the former weed patch was given manure and seeded with a mixture of smooth brome, orchard, meadow fescue, alfalfa, and yellow sweetclover.

Last year 19 steers grazed on these 3½ acres from June 1 until frost. The steers were taken out only during irrigations. The grass grew faster than the steers could eat it during the first part of the season, so Peterson cut 74 bales of hay as an extra dividend.

**NEIGHBOR HELPS NEIGHBOR.**—It's all for one and one for all among the 235 farmers cooperating with the Timpanogos and Nebo Soil Conservation Districts in Utah County, Utah.

Members of the two districts have joined in the purchase of a 30-foot land plane to be used to put the finishing touches on fields that have been roughly leveled.

Land leveling in Utah is one of the most important objectives of the conservation program on irrigated land, according to Dale Schott of the Soil Conservation Service. Schott reports that there are 96,700 acres of irrigated land under cultivation in the two districts and figures that the land plane can be used on at least 65 percent of this area. This, he says, can result in an increased crop production of from 5 to 30 percent, provided other necessary conservation practices are carried out.

**GRASSES LICK GULLY.**—"On 30 acres where one cow once would have starved, I'm now grazing 20 cows half the year and still have sufficient vegetation to control erosion," says Gerald Johnson, a director of the Lower-Cobolla Soil Conservation District, in Rio Arriba County, N. Mex.

When soil and water conservation operations were started, there were many small gullies leading into a deep arroyo. Sagebrush and other undesirable vegetation occupied the remainder of the land. Production was decreasing and erosion was increasing.

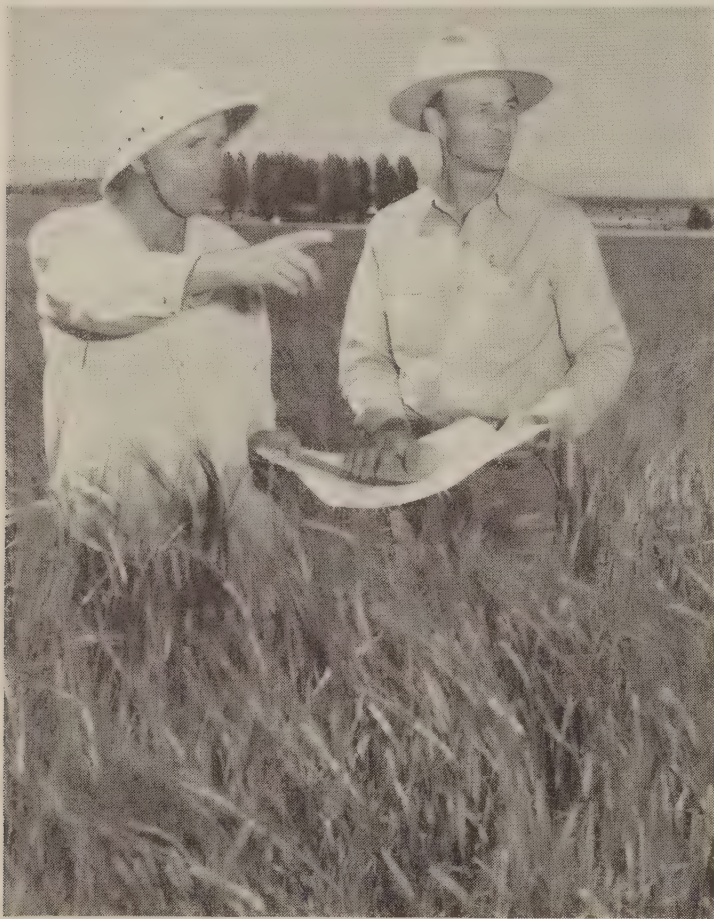
Johnson fenced the area about 10 years ago. He then cleared the sagebrush and obtained the aid of SCS engineers in terracing 5 acres. He found that one of the cheapest and most effective practices was the planting of a mixture of brome, western wheat, bluegrass, sweetclover, and timothy in the severely eroded areas where runoff water accumulated two or three times annually.

In addition, Johnson planted 3 acres of alfalfa in rows which now produce 5 tons of hay annually. He also built a stock tank which helps control erosion in a gully. Three acres were planted to wheat and rye for winter pasture.

"I manage the grazing of my cattle so the plants can produce seed annually," Johnson explains. "This allows the plants to become stronger, so they produce greater quantities of feed and also control erosion in both the main and side gullies. Where there originally was a gully about 1,500 feet long and 50 feet wide, good grass now is providing grazing for five cows for 5 months annually."



## PACIFIC



L. A. Joslin (left) netted \$6,000 profit the first year of conservation farming near Redmond, Oreg. With him in barley field is Anton Winkel, SCS technician.

**EVEN A NOVICE CAN SUCCEED.**—L. A. Joslin, postwar farmer of Redmond, Oreg., gained \$6,000 from his first year's experience with conservation farming.

Middle-aged Joslin left the humdrum of a Los Angeles welding shop to tackle agriculture on an 80-acre farmstead.

A year ago Redmond SCS men helped Joslin work out a farm conservation plan, the first in Deschutes County's newly formed Mid-State Soil Conservation District.

One look at the old irrigation system in use on his farm showed it was washing soil away down to the volcanic ash cinders. Some parts of the acreage had too much water. Crops in other areas were thirsty.

The job of rebuilding his farm along soil-conservation lines, will take about 5 years, Joslin figures. "I'm only getting well started. But even a novice has a good chance these days."

**PLANTING BY PLANE.**—"What next by air?" Southeast Washington folks were getting pretty well accustomed to farmers using planes for such farm chores as spraying, dusting, fertilizing, and predatory control up to a year ago. Then, last spring, the first sweetclover-laden plane made farming history in the Walla Walla Soil Conservation District by sowing a field quicker than it had ever been done before.

Pin-point sowing of more than 10,000 acres of top-producing wheat and pea land is the latest step to quicken the pace of soil conservation work—from the air.

Taking to the air to speed up their early spring farming, district cooperators sowed nearly 100,000 pounds of clover seed during a 30-day period, ending in late March. Many wheat-pea men see in aviation a way of getting farm jobs done faster, earlier, and better.

When SCS technicians checked up on the trend of farming practices a few years ago, they found that only a few farmers were seeding sweetclover for a green manure crop. Ranchers hedged on using the practice because sweetclover, being a biennial crop, turned under the second year, put land out of production for a year in a wheat-fallow cropping system and 2 years in a wheat-pea rotation.

With prevailing top grain prices and the national call for more and more food, most wheat-pea ranchers said the work load was too great to warrant taking their acres out of production. Most of them sought ways of holding on to sweetclover as a green manure crop and as a soil-saving legume.

Using standard farm equipment, drilling or broadcasting of clover seed is delayed each spring until the ground is firm, to prevent damage to the grain crop.

Two years ago Elbridge Bacon, of the Walla Walla SCS staff, watched farmers dust peas by plane for weevil control. Bacon got the idea that seeding at 25 feet wouldn't be any tougher than dusting at 10 feet above the ground.

Walla Walla ranchers thought Bacon's air-seeding plan worth trying. That spring 12 of them agreed to try plane-sowing of clover seed on 2,000 acres.

This spring a larger number of farmers sowed clover by air. The mark of 10,000 acreage seeded is expected to be stepped up again in the spring of '49.


Here's how airplane clover seeding is done. One flagman is stationed at each end of a field. After each flight run they move 35 feet across the field. The seed spread is about 70 feet, allowing for a 20-foot lap on each round.

Air seed broadcasters stay on the ground when the wind whistles over the wheat lands. Even a light breeze will blow the seed off the target. But, when sowing conditions are right, a pilot can hit a hat on the ground with from 8 to 17 seeds on each flight over a field.

Joe F. Martin, who has 300 acres of air-sowed clover, sums up a common attitude: "We've got to do something while we have enough soil to do it with. Planes are helping us speed up the job of saving our soils and we're getting good sweetclover crops for green manure without taking our land out of production."—Herb Boddy.







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**WELLINGTON BRINK**

Editor

Art Work by  
**W. HOWARD MARTIN**

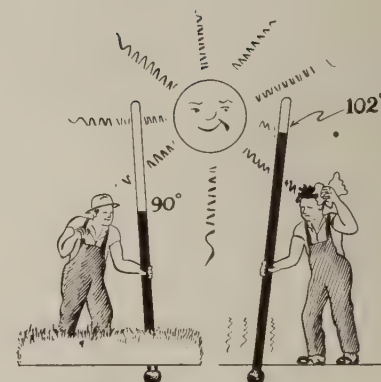
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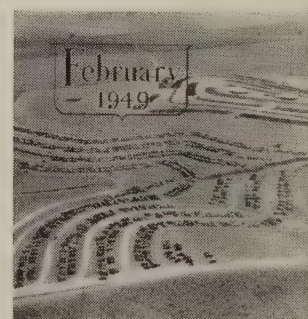


**SOIL AND OLD SOL.**—There's a certain amount of pleasure, now that winter is whipping down on us, to recall some of last summer's temperatures. Here's a mite of information involving August heat in the Texas Blackland.

Tom S. Giddens, soil scientist assigned to the Kaufman-Van Zandt Soil Conservation District down around Terrell, Tex., woke up one morning wondering about the effect of a good stand of King Ranch bluestem on soil temperature.

That afternoon he took out his thermometer and found that: The air temperature 4 inches above the ground was 95°; the soil temperature 1 inch beneath the surface where a good cover of King Ranch bluestem grew was 90°; and the soil temperature 1 inch beneath the surface where the soil was bare showed 102°.

Giddens concluded that good soil cover lets soil keep cooler. Cooler soil, naturally, loses its moisture through evaporation a lot slower than hot soil. Q. E. D.: A good mulch is a good thing if you are in the farming or ranching business.



**THE COVER.**—Even the cars follow the contour in this view of the main parking area during the National Plow Terrace Building Contest, held last fall in Shelby County, Iowa. The two shields are appropriate to a patriotic month in which fall the birthdays of Lincoln and Washington. The photograph is by Ray W. Jones, Mills County Soil Conservation District.

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# Farm Game Program in Maryland

Streambank protection along the Pocomoke River, Md. Shrub lespedeza does excellent job on spoil bank. Lovegrass is effective on upper ditchbank but doesn't do so well lower down, below high water mark.

By **CHESTER M. KERNS**

**A**FTER 3 years of development, Maryland has a farm game program that clicks because there is teamwork among farmers, the Maryland Game and Inland Fish Commission, the State Soil Conservation Committee, the soil conservation districts, and the Soil Conservation Service.

This program establishes wildlife refuges in woodlands and fields that are too steep or too eroded for agricultural use, but that can be made into good wildlife habitat through erosion control practices. It brings about the best use of the lands, and ties in the wildlife phase of each cooperating organization by recognizing vegetation as a common working tool.

Organized in late 1945, but not accepted by all cooperating groups until the following year, the program is now producing highly satisfactory results in 20 of the 22 Maryland soil conservation districts. By July 1, 1948, it had planned 250 wildlife refuges, of which 170 (2,050 acres) had been established. It had planted more than 24,000 trees, 174,000 seedling shrubs, and 7,700 pounds of seed for wildlife borders and food patches and for protection of spoil banks, drainage ditches, and stream banks.

NOTE.—The author is work unit conservationist, Soil Conservation Service, Westminster, Md.

These refuges hold "seed stocks" of game, birds, and animals from which the natural increase provides surpluses for hunting on surrounding farm land. With good management, little or no artificial stocking is required. This replaces the wasteful, costly, and otherwise less satisfactory practice of propagating game birds and animals in pens and releasing them in fields with small chance of survival.

The program was initiated by Ernest A. Vaughn, director of the Maryland Game and Inland Fish Commission. In 1945 he and Edward M. Davis, State conservationist for the Soil Conservation Service, and Frank Edminster, chief, biology division of Region 1, worked out the details with the Maryland State Soil Conservation Committee. Starting in Montgomery County, they laid the ground work through a series of memorandums of understanding between the Maryland Game and Inland Fish Commission, the Maryland State Soil Conservation Committee, and the individual soil conservation districts. The agreements authorize SCS planning technicians to include in each farm conservation plan, when agreeable to the owner, establishment of a 5- to 25-acre wildlife refuge.

The idea calls for upland refuges on farms that possess the general requirements for native wildlife, such as woodlands, grasslands, and cultivated fields. They are placed preferably along or close to streams of good water. Refuges primarily for fur-bearing animals, wild waterfowl, and fish are





L. to r.: M. Myers, temporary refuge caretaker; M. E. King, State wildlife project leader; Raymond Buchman, farm owner; C. M. Kerns, SCS technician.

installed where conditions are suitable. In some refuge areas there are provisions for building and managing lakes, marshes, and fish ponds. Unless a farmer prefers, refuge sites are not included on fields where other farm crops may be grown.

In Maryland approximately 93 percent of the land area is under private ownership. Sixty-six percent, or 4 million out of 7 million acres, is in farm land. Much of this agricultural area is intensively farmed, especially in the Piedmont and Coastal Plains. A growing scarcity of wildlife had resulted from the cleaning out of fence rows and odd areas to make way for cultivation and pasture, and from the drainage of small areas of questionable value to agriculture. These and other factors had caused a steady decline in small-game populations and other beneficial wildlife.

Improvement of wildlife habitat within a refuge area commonly takes the form of border, hedge and thicket plantings of shrubs, woods plantings of evergreen and hardwood trees, and border or strip seedings of cereals as food patches. Usually, combinations of these practices are used. Food and cover plantings are not confined to refuge areas. Similar plantings are made at other likely locations on the farm. The extent is governed by need for erosion control measures and the presence or absence of good natural conditions.

The extensive plantings are shrub lespedeza, multiflora rose, silky-cornel dogwood, tatarian honeysuckle, high-bush cranberry, and coralberry.

Maryland utilizes Pittman-Robertson Federal aid funds to finance part of this cooperative program with the districts. Federal regulations provide that such funds may be spent for a maximum of 75 percent of the total cost of projects, the State

to contribute the remainder. Federal funds are authorized for four classes of work and each requires approval of the United States Fish and Wildlife Service: (1) land acquisition, (2) surveys and investigations, (3) habitat improvement and maintenance, and (4) coordination projects.

Participation by the Maryland Game and Inland Fish Commission in field work includes furnishing of refuge boundary-line wire, posts, and signs; some labor to establish and develop refuges; technical assistance in wildlife management; necessary quail stocking; game-warden patrol and law enforcement; traps for predator control; and some planting stock and seed for habitat improvement.

The soil conservation districts, through SCS technicians, develop complete conservation farm plans, including location of the refuge sites. The district supplies technical assistance for the field layout of all conservation practices specified in the farm plan and the bulk of the planting of stock and seed needed for wildlife habitat improvement and erosion control.

The farmer is asked to assist in establishment of the refuge; protect the area from fire, grazing, and hunting; permit hunting on the remainder of the farm; preserve hollow or dead den trees for wildlife; make brush piles following wood cuttings; plant wildlife food and cover species; cooperate in the enforcement of conservation laws; feed stocked wildlife until well established; and cooperate otherwise in the management of the refuge area.

Six regional wildlife field superintendents of the Maryland Game and Inland Fish Commission are cooperating with the district farm planners. The State is providing refuge caretakers in each county to assist farmers directly with labor and guidance. The State has the opportunity to grow a limited amount of planting stock and seed upon State-owned farms occupied by the refuge caretakers and used for storing equipment used in the program.

While the labor of establishing and improving the refuges has generally been furnished by the State Game and Inland Fish Commission and the farmer, some projects have been sponsored by Isaac Walton League chapters, 4-H clubs, FFA chapters, sportsmen's clubs, and public schools.

The educational program in Montgomery

*(Continued on p. 152)*





By C. W. GEE

Roger E. Sherman and Virgil Goff inspect district's new cultipacker seeder. Goff sowed alfalfa-brome in 20 acres of wheat last spring, harvested 45 bushels of wheat per acre and produced fine stand of alfalfa-brome.

**S**UPERVISORS of the Soil District of Worth County in western Missouri made 700 acres of grass legumes grow during 1948 where none grew before by using an ingenious financing plan which other soil conservation districts might well copy. Without using any district money whatever, they bought and paid for a combination cultipacker and seeder.

With Roger E. Sherman, work unit conservationist, the supervisors decided grass legumes were necessary to a better land-use program in their district. Good stands of alfalfa and brome grass were difficult to obtain with standard farming equipment. Out of necessity a unique financing plan was born.

Sherman and the supervisors talked matters over and decided that many farmers who would hesitate to invest in the full purchase price of special seeding equipment would be perfectly willing to pay for seeding a good stand on an acreage basis.

Meeting at the district office in Grant City, the supervisors worked out a novel sort of contract. Under the terms of this agreement, 16 farmers of the Worth district put up \$40 each for purchase of a cultipacker-seeder and a trailer to haul it.

In return for the \$40, each farmer was entitled to use the cultipacker-seeder in seeding 40 acres of his land at \$1 per acre. The supervisors agreed this was a reasonable rental.

The contract provided that when the 40 acres had been seeded, the \$40 obligation to each individual farmer would be canceled and his share of the seeder revert to the soil district. The 16 farmers were given seeding priority over non-contributors. The district agreed to maintain the machine and transport it from farm to farm.

With the \$640 advanced by the 16 farmers, the district supervisors bought the seeder for \$482 and used the rest to purchase a trailer.

The seeder arrived April 4, 1948, and was put to work immediately. Because of damp weather, only 125 acres of grass legumes were seeded that spring. More favorable conditions prevailed in the fall and in a 2-month period starting August 6, district cooperators seeded 580 more acres of alfalfa-brome grass. Good stands resulted.

Today the Worth district owns its own seeder which is still in good condition and will be rented to other district cooperators henceforth. Sherman predicts that within a few years Worth will lead in its acreage of grass legumes.

Supervisors are Ed Prest, chairman, C. A. Scott, William R. Penny, C. C. Foland, and Frank Miller.

NOTE.—Mr. Gee is an information specialist, Soil Conservation Service, Milwaukee, Wis.



# ALL FORCES *Pull together*

By **BRODIE PUGH**

**A** MASTER soil conservation program carried out last fall on the John S. Welsh, Jr., farm near Shreveport showed what can be accomplished through cooperation. It demonstrated how easily the soil-erosion problem of this Nation could be whipped if all who are able to contribute to its solution were to get together like friendly neighbors—a trend much in evidence in recent years.

The big program of soil conservation on the Welsh farm was sponsored by the Shreveport Chamber of Commerce and the Upper West Red River, the Dorcheat, and the Upper Sabine Soil Conservation Districts. But in the weeks of planning and on the day of execution, the sponsors had generous help from numerous sources, all working closely together. Business firms furnished seed, lime, and fertilizer. Implement dealers furnished operators and automotive equipment worth half a million dollars. Paper and lumber mills supplied modern equipment and mechanics. Newspapers and radio stations publicized the event and interpreted its meaning for the benefit of their audiences of tens of thousands of persons. Soil Conservation Service technicians and employees of other agencies worked together on the technical phases. The general members of the chamber of commerce, especially the agricultural committees, gave a lot of time over a period of weeks. Soil conservation district supervisors and cooperators carried out important tasks. The United States Air Force, the National Guard, and the State government sent several officials with words of encouragement and the promise of official backing for soil conservation in all parts of Louisiana.

It would indeed take considerable space to enumerate all who worked on this project. The point to be emphasized is that, as was the case on this particular occasion, the conservation of soil and

water resources is not a job for the Federal or the State government alone, or for the owners and operators of the farm land alone. Rather, it is a job for everyone, and a task that needs the help of everyone, if the erosion of the Nation's soil is to be stopped before it is too late and if American

(Continued on p. 152)

## CANDID VIEWS OF BUSY DAY

1. Signboards on U. S. Highway 80 publicize demonstration. The farm will be open to public annually for 5 years for inspection of results.
2. John S. Welsh, Jr., and Edgar W. Fullilove, chairman of chamber of commerce agricultural committee, check over contract between farmer and sponsors.
3. Welsh mans tractor, clears away slashings in preparation for big day.
4. John, pretty spouse Ferne, little daughter Mary Lou.
5. Welsh family takes turn around spacious, tree-shaded front yard.
6. Once wooded area, grown unproductive, was destined to be a pasture.
7. Same area as 6 with big machines at work. In one day this large field was disked, contoured, terraced, limed, fertilized, and planted to oats. Next spring it will be overseeded to lespedeza and Dallis grass.
8. Looking toward dam site, Welsh makes pre-construction home movies of area reserved for stock pond.
9. Heavy equipment gouging out pond.
10. J. T. Carr, mounted on mechanical tree planter, drops pine seedlings. Groups like these scattered over farm all day, watching application of various conservation measures.
11. Full view of tree-planting machine, Bill Flowers in driver's seat. The machine opens furrow and cuts slit into which man on the back inserts a seedling. The machine then closes soil around seedling.
12. Welsh chats with James E. McGinley (left), manager of chamber of commerce agriculture and industry department, and J. C. Dykes (right), assistant chief of Soil Conservation Service.
13. An adept MC was Albert J. Meek, general committee spark plug.
14. Tom P. Moore, supervisor of Upper West Red River Soil Conservation District, explains district's responsibility in coordinated program.
15. Congressman Overton Brooks tells what he saw at mouth of Mississippi River where dredging is done 24 hours a day to keep the channel open: "That mud comes from our farms."
16. Chatting in foreground are Homer H. Harris, Sr. (right), president of Red River Valley Association, and H. N. Smith, of the Soil Conservation Service.
17. State Commissioner of Agriculture W. E. Anderson expresses pride in achievements of districts.
18. W. T. Nolin, president of Louisiana Soil Conservation District Supervisors' Association, urges farmers to be alert for good ideas to carry back for use on own farms.
19. H. B. Martin, State conservationist, emphasizes vital stake which every citizen has in soil conservation.
20. J. C. Dyes, SCS assistant chief, expresses optimism in our "having sense enough to go ahead and finish this conservation job before we go hungry."
21. Lt. Gov. W. J. Dodd declares: "The people of Louisiana want soil conservation and the State leads in appropriations for this work."
22. J. H. Kitchens, Jr., assistant State forester, talks about part of forestry in conservation work.
23. J. P. Martin, Texas State Soil Conservation Board, congratulates neighbor State on its forward-looking soil conservation policy.

NOTE.—The author is district conservationist, Soil Conservation Service, Shreveport, La.







## ALL FORCES PULL TOGETHER

*(Continued from p. 150)*

agricultural land is to be brought into maximum, permanent production in time to maintain the present standard of living.

An estimated 10,000 persons saw the various dovetailing measures of soil conservation applied to the Welsh farm. They heard soil conservation talks. Many other thousands got an insight into the work through radio broadcasts from the scene and through newspaper stories and pictures.

The idea, of course, was not simply to concentrate thought on the need for concerted action. The immediate task was to convert an eroded and depleted 320-acre piece of land into a productive conservation farm in 1 day. That achievement in itself showed what makes up a coordinated soil conservation program, how it is applied, and what it does for a farm. It was a dramatic way of calling attention to the entire conservation task—a task that embodies a large number of related practices. Of course, as was pointed out by J. C. Dykes, assistant chief of the Soil Conservation Service, an entire program of soil and water conservation cannot be applied in 1 day, as many practices are seasonal and must be installed at the proper time. For example, certain pasture crops cannot be planted until spring, and pine trees can be planted successfully only in January and

John S. Welsh, Jr., got a surprise when he bought 320 acres of eroded and depleted farm land at Flournoy, La., in January 1946. He discovered that the first individual owner of the land was his great-great-grandfather, Dr. Alfred Flournoy.

Owned originally by the United States Government, the land was eventually given to Louisiana for school purposes. On March 19, 1849, almost 100 years ago, Dr. Flournoy bought it from the State through the superintendent of schools for Caddo Parish. He held this particular parcel for 14 or 15 years and then sold it to five other persons, the abstract revealed.

Flournoy, 11 miles west of Shreveport, was named for the doctor and a brother, both of whom acquired large pieces of land when they came to northwest Louisiana from Tennessee in the 1830's.

February in this part of the country. But many major practices were applied in the 1 day; others were carried out to show how they are done, such as the planting of pine seedlings with a machine; all the others will be applied at the proper time, so that within a year young Welsh will have a farm on which an entire soil conservation program has been applied.

Nor, as Dykes also noted, can a conservation farmer be made in a day. But those of us who worked out the plan with Welsh agreed with Dykes when he added, "I believe that John Welsh will become a conservation farmer, a conservation farmer being one who farms the conservation way because it is part of him, because he understands that it is good for the land."

In helping to make a conservation farmer out of 31-year-old John S. Welsh, Jr., the sponsors of the master soil conservation program can also feel that they have been well repaid.

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## FARM GAME PROGRAM

*(Continued from p. 148)*

County schools, under the leadership of Malcolm E. King, project leader of the farm game program, is outstanding. Here children in six schools have sponsored as many refuges and are doing all work in their establishment. Five county schools expect to construct fish ponds within wildlife areas. Pupils call refuges their "outdoor laboratories." Here they study soil, plants, and wildlife and are taught to record their findings, to make plans after study, and to meet for reports and discussion—an effective way to teach conservation to young Americans.

Maryland's cooperative program indicates the value of coordinating wildlife management with the conservation of our basic natural resource, the soil. It has already received acclaim in many parts of the country.

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**"POLICE POWER" ON THE LAND.**—Recognition of the importance of land to the people and the Nation is becoming more general. Frequently it is remarked that owners and operators should be compelled to use land to preserve permanently its productive capacity. A discussion of this subject, insofar as it relates to the power of soil conservation districts, is contained in a pamphlet entitled "Land Use Regulation in Soil Conservation Districts." Copies may be obtained from the State, regional, or Washington offices of the Soil Conservation Service.

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# Reconditioning

## WIND-BLOWN SANDY LANDS for GRAZING

By B. W. ALLRED

Side-oats grama seeded in spring of 1942 in 36-inch rows by Soil Conservation Service at Cheyenne, Okla., on land utilization project. Cultivated and mowed to control weeds. Seed combined in 1944 and each year since.

A FEW miles west of Cheyenne, Okla., is a stretch of sandhill country which, during the 1930's, suffered severe wind erosion. Dunes were forming and sand raced along the surface with every breeze.

The scene has changed. The bluestem grasses seeded by the Soil Conservation Service on land no longer suitable for cultivated crops are now producing beef at the rate of 30 to 50 pounds an acre.

During the 1930's, both corn and cotton seed were literally blown out of the ground before germination in many fields. Most of the plants that came up were soon shriveled in the dry wind or were shredded by wind-driven sand. Productive topsoil accumulated along fence rows, clumps of shinnery oak (mottes), and yucca. Many of the landowners petitioned the Federal Government to purchase the land so that they could move to areas of greater opportunity.

These requests were heeded, and the Cheyenne Land Utilization Project was established to demonstrate proper land use and reconditioning of wind-eroded areas. The Government bought 30,503 acres of this land within an area of 290,560 acres selected by the Government and proposed by

local people for a demonstration project. The prices paid for the land averaged \$7.50 an acre.

The men and women who pioneered in the area less than half a century ago found an abundance of grass throughout the locality. Sand bluestem, Indian grass, and big sand reed grew 4 to 8 feet tall. Little bluestem was nearly "stirrup-high," and side-oats grama, Canada wildrye, and Texas bluegrass were nearly as tall.

The settlers reasoned that since the sandy land grew grasses so well it should be good for farming. But the plow-up of the sandy grasslands was followed by tragedy. As soon as the binding grass fibers in the soil were dissipated through cultivation and decay, the soil fell loose and unstable with the first protracted drought. Blow holes dotted the fields, crops failed to germinate in the



Part of a 30-acre field seeded to weeping lovegrass in March 1945. The grass was planted in sorghum stubble. This field yielded 100 pounds of seed the year it was planted to lovegrass. The area provided grazing during the winter of 1945 and again in spring and part of summer following. Still in production.

NOTE.—The author is chief, regional range division, Soil Conservation Service, Fort Worth, Tex.



desiccated soil. When the Government sought to purchase the worst of this "blow land," much of it already had been deserted by the owners.

Later, the Soil Conservation Service was given custody of the land—in 1940. Technicians of the agency quickly went to work on a program designed to reclaim or recondition the barren land sufficiently to produce grass. That was the only crop that could be grown with safety, it was felt. Fences and water holes were dug and ponds built to enable proper management of the animals on the old grasslands as well as the newly seeded areas. A. T. Elder of the Soil Conservation Service, in charge of the project, reports that 7,500 acres of former blow land has been successfully seeded to native and introduced grasses, mainly native bluestems. Today fat steers can be seen wading through stands of grass that strike them high on the side.

Fred Whittington, the Soil Conservation Service man in charge of the Cheyenne project from 1940 to 1947, recalls that he and his staff had to outwit the winds before they could establish satisfactory stands of grass. The sandy land was roughened to slow down wind erosion by the use of machines that turn clods to the surface. Under this condition, cover crops of sorghum were established. Once the cover crop matured, only the seed was harvested. Stalks were left as protection against the wind; seed was drilled in the spring. Most of the land was seeded to what was locally called "tall grass mixture," composed of side-oats grama, little bluestem, sand bluestem, Indian grass, and switchgrass. The mixture was drilled directly in the cane stubble at the rate of 12 pounds an acre. A small acreage was planted to native sand lovegrass, the seed being drilled at the rate of 1 pound an acre in rows 14 inches apart. Several hundred acres of weeping lovegrass, a native of Africa, have been planted to provide early season grazing for cattle. The seeding in this instance has been at the rate of 1 pound per acre where grass was drilled in 14-inch rows and three-fourths of a pound where the rows are spaced 40 inches apart. Grass seed produced on this project has helped to seed other project lands, as well as areas in the Upper Washita and other soil conservation districts. In the current period of seed scarcity the amount of seed grown is significant. Nearly 65,000 pounds have been produced since 1943. Last year the following amounts were harvested:

	Pounds
Little bluestem-----	4,400
Weeping lovegrass-----	9,000
Side-oats grama-----	3,000
Sand lovegrass-----	60
Tall grass mixture-----	7,275
Total-----	23,735

Some land already in native grass, plus the newly seeded areas, constituted the bulk of the 30,000 acres of Government-owned land. This grassland has been used by local landowners under grazing arrangement since 1943. At present, 96 land operators benefit from the grass. No one man runs animals on this grass year long. There were 8,191 unit months of grazing last year, or the equivalent of 682 head year long. Income from grazing has increased steadily since 1943. Then it was \$3,707.03; in 1947 it was \$10,718.15.

It is estimated that fees charged represent about 20 percent of the benefits gained by those using the range.

Twenty-five percent of the grass income is turned over to the county in which the land occurs, in lieu of taxes. When this land was removed from tax rolls it obviously had little effect on the county's tax income. Yearly reductions in savings in road maintenance and school and police costs have more than offset the annual tax loss.

A general field trial, suggested by local ranchmen so that they could observe the value of mowing shinnery oak and sand sagebrush, compared with the practice of leaving the brush, has been under way since 1944. Two local ranchmen have cooperated by furnishing yearling Hereford steers for the trials. Otto E. Boatright's steers were used from 1944 to 1945, and steers belonging to Dick Ivy were grazed in 1946 to 1948, inclusive.

Pastures are 40 acres in size. One is mowed each spring before the bluestem grasses and oak begin spring growth. The other pasture is not mowed. Eight steers graze the pastures from about the middle of May until the middle of September each year.

*Pounds of steer gains from mowed and unmowed ranges, Cheyenne, Okla., L. U. Project, 1944-47*

Date:	Mowed range	Unmowed range
September 1944-----	2,320	2,080
September 1945-----	2,180	1,680
September 1946-----	2,000	1,600
September 1947-----	1,810	1,370
Total pounds-----	8,310	6,730



Steers on mowed pasture turned off 1,580 pounds more beef in the 4 years than steers on unmowed pasture. Figuring beef at 20 cents per pound, the steers on the mowed area turned off \$316 more in beef than the others. Mowing costs ran about \$200 for the 4 years, leaving a \$116 profit advantage for mowing during the 4-year period.

During 4 years, weeds on the mowed pasture increased 5 percent, grass 3 percent, and shrubs decreased 8 percent. Weeds on the unmowed pasture increased 13 percent, grasses decreased 22 percent, and shrubs increased 10 percent.

Range production continued to go down on the unmowed area through loss of both stand and vigor of good grasses. Productivity of mowed range went down more slowly. The decrease was due to a loss in vigor of the better grasses.

The bulk of steer gains is made by July 15. The 4-year average at Cheyenne shows that about 82 percent total weight on steers on the mowed pasture had been made by July 15, and over 90 percent of steer gains on the unmowed pasture had been made by July 15. Both feed shortage and grass maturity caused steers on the unmowed pasture to make poor gains in August and September.

Steers in the mowed pasture had made maximum use of available forage by August 12, 1947, and when kept there until September 12, 1947, they lost 30.25 pounds each. Steers on the unmowed pasture lost 32.3 pounds each during the same period.

Range management, grass seeding, and stock water developments in the Cheyenne L. U. Project have served as useful patterns for local people to copy. Including field days and individual visits, over 2,000 persons have carried away ideas that they could put to work on their lands.

Marshall Jordan, district conservationist for the Soil Conservation Service, reports that the Cheyenne area has been a proving ground for practices useful in local soil conservation districts. Some of the grass seed and much of the inspiration and interest that went into planting 10,000 acres of grass on neighboring soil conservation districts originated there.

The same can be said of renewed interest in range management by ranchmen operating near the project. Already many benefits are showing up in the form of increased grass and beef production. Following is an example of what one Cheyenne, Okla., ranchman is doing to improve his grass.

A. F. (Chink) Beaty is a cooperator with the Upper Washita Soil Conservation District who has taken most of the gamble from his ranching operation by keeping his cattle well supplied with native home-grown grass. Beaty has been giving his grass a change to get ahead of his cattle for several years. His grass stand has improved at least 25 percent since he took over the ranch a few years ago. His sideoats grama, little bluestem, and sand bluestem, excellent producing and high quality grasses, are mixing with the short grasses and crowding out a lot of worthless annual weeds. Grass has increased enough in one pasture to shut off, almost, the runoff which used to fill a dam. Several large gullies are being healed with mid and tall grasses. Beaty doesn't have to feed his cattle hay either. He wintered his herd without it last year.

"I keep my cow herd cut down so I can grow my hay on the range and let the cattle rustle for it when snow falls," he said. He feeds each cow about a pound of cake a day in winter to provide the protein and minerals that the dry grass lacks.

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**JOB WELL DONE.**—To Raymond H. Davis, who recently resumed his position with the Soil Conservation Service as chief of the project plans division, has come, by command of General MacArthur, a commendation for meritorious civilian service in Japan.

The citation is signed by Maj. Gen. Paul J. Mueller of the General Staff Corps, Chief of Staff. It reads:

"For meritorious service to the occupation of Japan as chief, agriculture division, natural resources section, general headquarters, Supreme Commander for the Allied Powers, from 18 November 1946 to 18 June 1948. Mr. Davis displayed marked professional skill and unusual ability in directing the democratization of agricultural activities and the maximization of food production. Through his competency, resourcefulness, and unremitting devotion to duty, Mr. Davis made an eminent contribution to the aims of the occupation."

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**ARGENTINA CARRIES ON.**—From Buenos Aires comes a letter from Mrs. John F. Manning, California Conservation Chairman for Garden Clubs of Santa Barbara, to Dr. Bennett: "I know it would have done your heart good if you had been at the office of the Soil Conservation headquarters here for Argentina. Your work is certainly bearing fruit down here. It was pleasing to see pictures of U. S. A. soil conservation methods hanging on the walls in both the offices of Soil Conservation and Forestry Service when I visited them yesterday. I talked to the men who were in the States in 1943 to study our work—they have done good work for the 2 years they have been organized. I thought it would be interesting to you to know that your department had been so much help to Argentina—so this note. The Director of Forestry Service here, Sr. Lucas a Tortorelli, has written a splendid book on the service and he was so kind in giving me a copy. (I have been studying Spanish for years and can read it, but I can't understand the Argentinos.) The Soil Conservation Service gave me a copy of one of your booklets that they had printed in Spanish."



# DISTRICT PROFILE

PARLEY P.  
SMITH  
—  
UTAH

The soil and water conservation movement has grown rapidly in the "Land of the Mormons" in the past 7 years. Today there are 39 districts operating in Utah. They cover about 80 percent of the State. Parley P. Smith, member of the Board of Directors of the National Association of Soil Conservation Districts and chairman of the Board of Supervisors of the West Salt Lake Soil Conservation District, has had a part in this rapid growth.

Smith's first contact with soil conservation work was in 1939 when the district program was introduced in Salt Lake County. Although the Utah enabling act was passed in 1937, farmers in Parley's area didn't get around to organizing a district until 2 years later. When they did, the people of Draper wanted Smith as their representative. His name wasn't on the ballot, but they wrote it in, and he was elected.

After the election, the supervisors selected Parley as the first chairman, a position he has held ever since.

Although Parley was interested in local conservation problems from the beginning, it was not until 1946 that he became actively concerned with problems beyond the borders of Salt Lake County. In February 1946 at the annual meeting of the district supervisors at Logan, Utah, Parley was given the responsibility of planning a State organization of district supervisors. Aiding him were Hugh Erikson of Kamas and H. Ray Francom of Levan.

Later, as first president of the State organization, Parley was sent to the National Convention of Supervisors at Chicago. Here he was elected to serve as one of the 14 directors of the National organization. He has held that position for the past 2 years. He attended the National meeting in the summer of 1948 and went on to Washington, D. C., to attend hearings on proposed farm legislation.

Parley P. Smith is truly a native son. He comes from hardy pioneer stock, his father, Absolom, having migrated from West Virginia in 1852. The family settled in the community of Draper, where



Parley Smith and his good crop of young Americans: Stacey, Mrs. Marion Dunn, Willis and Allen; sitting-

Parley, now boasting a young 62 years, still farms. He and Mrs. Smith have a family of six girls and three boys.

Parley's hobby is "swapping" horses. He prides himself on knowing a good horse when he sees one.

The Smith place at Draper is a general crop farm, producing mainly alfalfa, grain, beets, and corn. A small pasture provides feed for one milk cow.

Smith believes that many of the present land ills in Utah stem from poor irrigation practices, and better irrigation is one of his main conservation interests. He says, "Brigham Young, the Mormon leader, showed us how to turn the water onto the land, but he forgot to tell us when and how to turn





standing—Mrs. Deon Bagley, Mrs. Clair Cordner, Mrs. LeRoy Paul, Mrs. Smith, Parley, Carolyn; kneeling—LaRay.

it off.” Parley never misses an opportunity to discuss conservation and is a firm believer in keeping control of the conservation program in the hands of farmers and ranchers.

Parley and the supervisors of the West and East Salt Lake Soil Conservation Districts have worked hard getting needed changes in the State Soil Conservation District Law. Much remains to be done and, although Parley has been succeeded by E. S. Gardner of St. George as president of the State association, he is still working to get these changes put into effect.

Last spring he was master of ceremonies at the land-grading demonstration sponsored by the West and East Salt Lake districts. About 3,000

people watched the demonstration and saw the many kinds of land leveling equipment on display.

The other day when I visited the Smith farm, we got to talking about retirement. I asked Parley when he was going to retire from the farming game. He replied that he couldn’t think of retiring. At the age when many men retire, Parley P. Smith is just getting a good start!

—C. P. STARR.

## HE BUILDS PONDS

By C. W. CHAPMAN

SPENCER BARBER of Moultrie, Ga., is representative of a new type of businessman—the soil conservation contractor. Because of his work, and that of thousands of others like him throughout the country, soil and water conservation application is being speeded.

Moving the earth to make a living for himself, and ponds for farmers, is Barber’s specialty.

He got the idea on Guam. From his father he received a bulletin on farm contracting with heavy equipment, published by the Trust Company of Georgia, using information supplied by the Soil Conservation Service.

Although young Barber was then more concerned with building airstrips, roads, and attack facilities for the final assault on Japan, the idea appealed to him. He was heavy-equipment officer with the Army Engineers.

When he returned home, Barber easily turned into a pond-building business the knowledge and experience accumulated in 3 years studying civil engineering at The Citadel in Charleston, S. C., and more than 3 other years with the Army Engineers. Since November 1946 he has completed 25 farm ponds in the Moultrie territory, 19 of them for cooperators with the Middle South Georgia Soil Conservation District. All have been built according to specifications developed by Soil Conservation Service technicians.

Barber received his first training in farm-pond building from the Georgia Coastal Plain Experiment Station at nearby Tifton. In the fall of 1946, the agricultural engineers of this Sta-

Note.—The author is district conservationist, Soil Conservation Service, Tifton, Ga.





This model farm pond is on Georgia Coastal Plain Experiment Station, Tifton, Ga. Note irrigation equipment



Spencer Barber points out details of installation to C. W. Chapman, district conservationist working with the Middle South Georgia Soil Conservation District.

tion constructed a farm pond according to U. S. Department of Agriculture specifications. The adult education department of the Abraham Baldwin Agricultural College, located on the same campus as the Experiment Station, held a short course on farm ponds for interested people throughout the Coastal Plain. Spencer Barber and W. H. Varner, SCS technician for Colquitt County, were there. According to Barber, the inspiration for the farm-pond business came in The Trust Co. bulletin, but the know-how came from that short course in Tifton.

The Soil Conservation Service has long advo-

cated farm ponds for livestock and food for the farm. They believe farm ponds provide a better balance as an aid to better conservation of our land resources; therefore, Varner worked closely with Barber in getting started. Varner was on the spot throughout the building of the first farm pond. Barber declares the work of the Soil Conservation Service is indispensable in his business.

Barber said that his commitments for farm-pond construction were running far ahead of his ability to build. He attributed this pent-up demand partly to the extremely rainy weather during the



fall and winter of 1947. He said he expects to stay in the farm-pond business and expand his operations gradually.

The 25 farm ponds completed by Barber are furnishing continuous water for livestock despite dry seasons. They are well stocked with fish to provide recreation and food for the farm families, because Barber advises the owner to consult qualified specialists in maintaining and fertilizing the pond. They successfully weathered all the heavy rains of 1947 and early 1948 when so many farm ponds succumbed.

The success of Barber's farm-pond business is a tribute to the cooperation among agricultural agencies: Research for better agricultural practices, as demonstrated by the Georgia Coastal Plain Experiment Station; education, as demonstrated by the Abraham Baldwin Agricultural College; and cooperation of field workers with private enterprise to get the job done, as demonstrated by the Soil Conservation Service technicians assigned to the Middle South Georgia Soil Conservation District.

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## SOUTHWEST

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**COLLECTING SEED AND KNOWLEDGE.**—Students of the Branson, Colo., schools are going to make a contribution to the soil and water conservation program in this section of the country while studying soil conservation methods at first hand.

Fred Smith, vocational agriculture teacher, is having his students collect squaw bush seed for the Soil Conservation Service nursery at Albuquerque, N. Mex. This plan was worked out with the school officials, the supervisors of the Branson-Trinchera Soil Conservation District, and officials of the Soil Conservation Service.

The collected seed will be planted at Albuquerque and seedlings will be made available to farmers and ranchers cooperating with districts in the area. While making the collection, the Branson students will study soil conservation practices and learn to identify the various soil-conserving shrubs.

**COOPERATIVE BUYING.**—Farmers cooperating with the Bridgeport, Camp Verde, and Oak Creek Soil Conservation Districts in the Verde Valley of Arizona have been able to save more than \$2,500 on the purchase of seed for irrigated pastures through the formation of a purchasing pool.

Frank Gyberg, secretary of the Oak Creek district, is chairman of the buying group. Charles Van Gorder, SCS technician, worked out the seed mixtures and developed plans for seedbed preparation and planting.

More than 10,000 pounds of grass and clover seed were ordered. This was enough to seed more than 500 acres on about 50 different farms, and large savings over individual purchases resulted.

Gyberg reports that interest in permanent irrigated pastures in the Verde Valley has increased rapidly during the last 3 years. He points out that this type of pasture provides an abundance of high quality feed on small acreage, that little labor is involved since livestock do the harvesting, and that excellent protection against erosion is assured.

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**GRATEFUL COTTON CROP.**—Increased cotton production the first year after leveling his land more than paid for the dirt moving, says Hugh Moutray, farmer in the Seven Rivers community south of Artesia, N. Mex.

Moutray, cooperating with the Central Valley Soil Conservation District, obtained the aid of SCS engineers. Sixty-seven acres were leveled in blocks varying in width from 56 to 84 feet. Two hundred pounds of fertilizer, containing 16 percent available nitrogen, 20 percent available phosphoric acid, and no potash were applied to each acre.

Adjoining this leveled field is one on which cotton was grown following alfalfa the previous year. Moutray had expected the highly fertile field formerly in alfalfa to produce more than the newly leveled land. However, he found that the leveled field had a better crop.

This winter Moutray plans to install concrete drops on the leveled field where irrigation ditches drop from one bench to another, and also to level additional land as rapidly as possible.

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**UNKEMPT ACRES PUT TO WORK.**—Thirty tons of alfalfa and 300 bushels of wheat were produced on 15 acres of reclaimed farming land owned by Shelby Lisonbee of Bridgeland, Utah, cooperating with the Uintah Basin Soil Conservation District.

An electrically driven centrifugal pump lifts 2 second-feet of water from the Pleasant Valley canal to irrigate land which 2 years ago was covered with greasewood and sagebrush as high as a man's head. This brush was cleared off and burned, and the ground plowed and leveled. A tractor was used to build the dike for the water ditch. Other land preparation was done by Lisonbee and his sons with teams and horse-drawn equipment.

Nine reclaimed acres were seeded to alfalfa when the pump was installed in 1947, and the seed was sprouted by the irrigation water pumped from the canal. Six acres were sown to wheat, which yielded 150 bushels. In the spring of 1948 a 6-acre strip was planted to alfalfa and the wheat broadcast in the alfalfa as a nurse crop. Another 150 bushels of wheat were harvested. Three heavy cuttings of alfalfa were made from the 1947 planting on the 9 acres.

Lisonbee believes his crop yields have repaid his full \$1,500 cost of water, pump, and installation labor, and power which averaged \$40 a season. He now is clearing another 15 acres for seeding next spring.

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**COLORADO SCORE CARD.**—The Central Colorado Soil Conservation District made the highest score in the State—13,575 out of a possible 13,950—in the first annual Denver Post-KLZ Soil Conservation Recognition program.

Other winning districts: Bent, 13,350; San Juan, 13,020; Plainview, 12,675; Haxtum, 12,615 points.

The top five districts were chosen from 13 which survived regional judging conducted by leading Colorado bankers, Soil Conservation Service personnel, and members of the board of directors of the Colorado Association of Soil Conservation Districts.



The State judges, accompanied by representatives of the Denver Post and radio station KLZ, spent 2 weeks touring the State to pick the final winner, examining three farms or ranches in each of the 13 districts entered in the finals.

The San Juan district, which became the Billionth-Acre district in 1947, was cited for its accomplishments during its first year.

Plaques and cash prizes of \$500 were awarded to winning districts, and three outstanding farmers or ranchers of each winning district received special scrolls.

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**GRASSES ON TRIAL.**—One of the most ambitious and carefully planned grass-test plantings in Arizona has been made on the Henry Reidhead farm near Snowflake in the Navajo County Soil Conservation District. The test plot covers 3 acres, and the planting was done through the cooperation of the Soil Conservation Service and a commercial seed concern.

Thirty-eight varieties were planted. The mixtures include 13 wheatgrasses. Among these are four crested, two of the slender variety, and one of early crested wheatgrass.

Other grasses include the fescues, the bromes, weeping lovegrass, big bluegrass, timothy, and some rye grasses uncommon in the area.

The seeds were sown in shallow cultivated furrows on the contour, then thinly covered without rolling. The rows are about 30 feet long. Observations and comparative tests will be made in May or June, and continued over a long period.

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**GRASS MENU.**—Irrigated pastures are the easiest and cheapest ways to produce beef without danger of bloat, according to Harry Lenart, whose ranch is in the Indian Bend Soil Conservation District near Scottsdale, Ariz.

In the spring of 1948, SCS technicians helped Lenart plan his irrigated pastures. The land was leveled and planted to a suitable mixture. The 35 acres were divided into three fields which were irrigated every 10 to 12 days.

In early July, 60 beef cattle and 10 horses were turned on the pasture. They couldn't keep the grass eaten down, and 34 tons of hay were cut in August. In early October, 35 more cattle were added, and the pastures still provided plenty of feed until frost.

Altogether, Lenart has 170 acres. He expects to use most of his available irrigation water on 85 acres of grass pasture and raise beef the easy way. He is now sure that grass will produce more feed than anything else.

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**RESEEDING THE RANGE.**—Clearing sagebrush and planting crested wheatgrass have increased forage 10-fold on one 12-acre tract of the 4,000-acre ranch operated by Fred and Leonard Northcutt about 6 miles north of Regina, N. Mex.

The Northcutt brothers were among the first to become cooperators with the Lindrith Soil Conservation District. They started their reseeding program in 1941, when crested wheatgrass was planted on 12 acres after the sagebrush had been removed. Favorable results encouraged expansion of the reseeding program until there are now 80 acres in improved dayland pastures. Seed harvested from their own plantings and tall wheatgrass and Canadian wildrye seed obtained through the Lindrith district have been used in carrying on the program.

The Northcutt brothers expect eventually to have at least 2,000 acres in crested wheatgrass.

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**FUHRIMAN SHOWS FORESIGHT.**—Sweetclover for green manure has profited Delbert Fuhriman, a cooperator with the Northern Utah Soil Conservation District in Box Elder County.

Last fall, Fuhriman harvested 5,000 bushels of wheat from land improved by a green manure crop of sweetclover and alfalfa. He received about \$2,000 as a bonus for high protein content, and the yield ran about 20 percent more than adjacent fields not similarly treated.

Fuhriman's soil conservation plan provides for contour strip cropping, crop residue management by stubble mulch farming, sweetclover as a green manure crop, and alfalfa and grass for hay and pasture. All this is included in a crop rotation to maintain soil fertility on his 912-acre dry farm in Pocatello Valley near the Utah-Idaho border. The plan also embraces reseeding and proper management on 3,040 acres of range land where he raises top-quality Herefords.

Fuhriman has operated this place 10 years. When he started, it had an average wheat yield of less than 15 bushels per acre. The 1947 yield ran 28 bushels per acre. Ten years ago erosion was severe, gullies were getting deeper, and the soil was generally run-down. All this is being changed. Major gullies are being graded and seeded to a mixture of sod-forming grasses. Yields have been vastly improved. The soil is being held in place and the moisture is being absorbed where it falls.

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## NORTHERN GREAT PLAINS

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**WATER WHEN WANTED.**—Spring runoff water from the hills is his insurance against livestock feed shortages in winter, according to Joe Eggen, Archer, Mont., a cooperator with the Reserve Soil Conservation District.

This is because, as part of his farm conservation plan, he is developing a complete water-spreading system on his bottomland instead of letting the runoff go directly into Muddy Creek.

"We've got 65 acres under flood irrigation now," Eggen reports. "We have about 50 acres yet to go."

"I had my first flood-irrigated field in wheat in 1946. It yielded 30 bushels per acre compared with 15 to 20 bushels on dry land. Now it produces just as well in alfalfa for hay. Last fall I had 14 big stacks."

Eggen's lay-out is made up of 2,400 acres of range in the upland and about a quarter section in the broad Muddy Creek valley. He keeps a herd of 120 beef cattle.

Technicians designed a series of dikes that picks up the runoff as it comes from a coulee and keeps it from the creek as long as it can be used.

Each dike has a gate, so that after one field is given a thorough wetting, the water can be let onto another field. In this way, the water is kept moving slowly downstream until the excess, if there is any, is released into the creek at the farm's lower edge. One dike is also the entrance road from the highway to the farmstead.

The area in which the Eggen farm is located is one of usually limited rainfall. Sometimes it is less than needed by a crop. On the other hand, Muddy Creek drains a huge area and the coulees carry a large amount of water during the spring runoff.

Various farmers in the valley have done some water spreading since the early days. And since the Reserve Soil Conservation District was organized nearly 10 years ago, SCS technicians have helped to develop water spreading on nearly 3,500 acres on more than 25 farms.

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**HEAVIER LAMBS.**—Crested wheatgrass for lambing pasture, deferred grazing of range, better winter feed supplies, and elimination of herding—all parts of his conservation plan—are paying out in heavier lamb weights and lower expense, says Kenneth Kerr of Passaic, Wyo., a cooperator with the Dutch Creek-Clear Creek Soil Conservation District. Formerly Kerr's lambs weighed about 65 pounds at market time; last year they weighed about 76 pounds.

Crested wheatgrass is used for lambing pasture because it starts growth so early. The ewes, on green feed, fur-



nish plenty of milk to give the lambs a good start. This grass also supplies pasture that enables Kerr to defer the use of his native grasses until they get a good start.

Having the pasture divided into six parts for use in rotation made it possible for Kerr to stop herding. In addition to saving the cost of the herder, this arrangement lets the sheep graze at will. The sheep are moved from one pasture to another at intervals of 2 or 3 weeks. This gives the grass a chance to grow between grazings.

Water is now in easy reach of the sheep. They keep well spread out while they are grazing.

Coupled with the early spring pasture and deferred grazing is the better winter feed supply. Water-spreading has increased hay production by one-third. Besides being able to winter the stock in better shape, Kerr has reserves to help through dry seasons.

Kerr makes it a practice to visit the sheep two or three times a day while they are on pasture. Some coyote losses occur, he says, but they are practically the same under his present range-management system as they were when he had larger pastures and employed a herder.

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## UPPER MISSISSIPPI

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**RURAL CARRIER COMMENTS.**—Roy Walters, director of the Barry County (Mich.) Soil Conservation District, spends about half his time as mail carrier on a rural route. He is interested in all farm labor-saving methods calculated to help him operate his 140-acre farm on a half-day basis.

Walters finds that soil conservation farming saves considerable labor and also reduces machinery costs and other expenses. A complete farm conservation plan, developed with the help of SCS technicians, led him to shift from a corn-oats-meadow rotation to one which includes only alfalfa, brome grass, and wheat. His high-producing herd of Holsteins provides some of the labor of harvesting the grassland crops.

The following is Walters' own report:

"For several years I looked for ways to control erosion and still keep corn in the rotation. Unless I made all the corn into silage, I had to plant oats instead of wheat following corn. But oats were an unprofitable crop for me. Corn yielded well for the first few years, then it suddenly didn't because of dry weather. One day Mr. Ball, of the Soil Conservation Service, suggested that wheat might be better than corn in this locality. Wheat, he said, took advantage of the fall and spring moisture that we have. This sounded good, so since 1944 I have followed a rotation that included only alfalfa and brome and wheat.

"Perhaps my gross receipts are smaller under this rotation—which I doubt—but I do know that my expenses are much smaller and my net return is greater. I need less machinery and less tractor fuel.

"Over a period of a year my labor requirements are more evenly distributed. I have no spring and fall rush periods and cultivating corn doesn't compete with hay-making. It is a real pleasure to be able to hunt pheasants while some farmers are still filling silos or worrying about getting their corn picked. So far I have been able to sell wheat from an acre of land and buy more corn than I could have raised on the same acre. And I do it with much less work."

—J. S. CUTLER.

**FULL-SCALE CLASSROOM.**—The vocational agriculture class of the Jewett High School, in Harrison County, Ohio, now has a 120-acre farm on which it will experiment with soil conservation and other modern farming methods. The farm was given by C. C. Fay, strip-mine operator.

Part of the farm consists of spoil banks left by strip coal mining operations. The class hopes that its study of these spoil banks will develop some economic use for the

thousands of eastern Ohio acres which are in similar condition. The farm also has 12 acres of timber, 40 acres suitable for pasture, and about 40 acres suitable for row crops.

Acquiring the farm brings to realization a 10-year plan of Superintendent R. A. Kammeyer and Elias Lewis, vocational agriculture teacher. Assisting Lewis are John Feisley, work unit conservationist, and representatives of the Ohio State University, the Wooster Agricultural Experiment Station, and State and county conservation agencies.

**BIG DAM.**—Pouring money into a hole in the ground isn't usually recommended as a way of getting rich. But eight Boomer township farmers, cooperators with the West Pottawattamie County, Iowa, Soil Conservation District, expect it to pay dividends because they are putting \$3,000 into the control of a 70-foot gully.

These eight farmers banded together for the construction of a storage-type dam to check erosion which was not only eating away good farm land but also was threatening a county road. The dam is 50 feet high, 320 feet wide, and contains 20,000 cubic yards of earth, and it has created a 5-acre pond which is 40 feet deep in one place.

The dam is on the farm of Arthur Thomas. Others who contributed to its cost are Howard Nelson, William Hill, Hubert Minton, Henry Lilvedahl, the Athey Brothers, and Alfred Nelson. Howard Nelson owns a farm up the ditch from the Thomas dam and plans to build a dam on his own land this year at his own expense.

"I'm tired of seeing my soil head for the Gulf of Mexico," he says.

The 220-acre watershed which is drained is all under a conservation plan. The operators were among the first to form a soil conservation planning group. Terracing, grassed waterways, contouring, adapted rotations, and pastures are the main practices.

A county road has been relocated several times until it is 50 feet from its original location. Stopping the spread of the gully will protect it too and cut down on highway maintenance costs.

"Now when we put in a drainage structure we know it will stay," said Paul Mahoney, county engineer. "So many times when we put in tubes or bridges, we have had to replace them in a few years because of erosion."

**GULLIES STAY SHUT.**—Ed and Elmer Kolmerten, whose farms lie side by side just north of Fort Wayne, Ind., have put soil conservation into practice on an extensive scale with the help of the Allen County Soil Conservation District. On these farms are contour farming, terracing, pasture rejuvenation, fertilization, liming, and improved rotations.

"Year after year we had to plow the gullies shut in one field before we could do anything with it," Ed said. "One gully often was 3 feet deep. We put terraces on the field 2 years ago and haven't had to plow the gullies shut since."

During heavy downpours the water formerly rushed down a small valley onto a lane and a lowland pasture. The floods would wash the lane out and before it could be used again Ed had to fill the gullies. Ed and his dad built a diversion terrace at the mouth of the little valley and the water is now shunted southward into Spy Run.

A steep, eroded spot in one of Elmer's contoured fields was left as an unplowed correction strip. He's seeding that to alfalfa to prevent further erosion. In this and in other fields on their farms, where the rows cross low spots or draws, the Kolmertens leave sodded waterways.

The tractor uses much less gasoline and there's less wear and tear on machinery because all of the work is done on the level. The Kolmertens are convinced that terracing and contouring pay off. Water is slowed down so more soaks into the ground. The decreased runoff re-



duces erosion. With less washouts and more water, crops are better.

"I can't help but feel that in the average year, the crop is better because the fields hold more water," Ed declared. "Our loss before came in the soil that's gone. We should have caught it 20 years ago."

## NORTHEAST



Timber being cut selectively in newly opened area.

**CYPRESS SWAMP.**—Grow up and burn down has been the history of Cypress Swamp or Burnt Swamp as it is called by the local people in Sussex County, Del.

This is the largest privately owned tract of woodland in the State of Delaware. Although there are about 20 owners, Lee and Halstead Layton own together more than 7,000 acres of the rough total of 10,000 acres. Beginning about 1912 the Layton brothers started buying up land in and around Cypress Swamp. In those days the swamp was crisscrossed by county roads and there were clearings where settlers were living.

Originally the swamp consisted of white cedar and cypress, together with loblolly pine and gum and maple. Most of the virgin cedar and cypress was cut out at an early date. Uncontrolled fires burned through the swamp destroying the roots of the remaining stands. These trees fell over and slowly sank into the black mucky soils. In later years these trees were mined by the local people. The mining consisted of prodding the ground with a metal rod until a log was hit and then digging out the log. These were made into cypress and cedar shingles. The fires finally eliminated the reproduction of cedars and cypress and set the stage for loblolly and hardwoods.

In 1926 a drainage canal was dug through the swamp, practically cutting it in half north and south. A few lateral canals were cut to the south of the main canal in order to drain the wettest areas. This lowered the water table which, in turn, created ideal conditions for loblolly pine. The so-called islands or higher areas contained some beautiful stands of pine and hardwoods. By this time the county had abandoned the roads and they grew up to pine. This, plus the ditching, resulted in the area becoming an isolated block of timber approximately 20 square miles bounded by roads and farm lands.

There hasn't been any major logging operation in the swamp for years. Such cutting as took place was along the edges and on some of the islands.

Fires burned over the entire area at one time or another. Loblolly pine seedlings blanketed the area after the fires, only to be burned out later. Because of the lack of roads and trails it was impossible to get men or equipment into the swamp to fight the fires. Firefighting took place along the edges adjacent to fields and roads.

In 1944 the Layton brothers applied to the Sussex County Soil Conservation District for a woodland farm plan. In the meantime the adjoining land owners also filed applications with the district.

The first step was to open up the old county roads with a bulldozer followed by a grader. Some of the work was done by private contractors and some by district machines. To date over 10 miles of roads have been constructed through the swamp. After the roads were opened the land owners petitioned county authorities to legally abandon the roads. After this was done the roads were blocked to keep traffic out. This was done to prevent trucks from dumping refuse in the woods, which is a custom in this section, and also to prevent irresponsible motorists from starting fires. State Forest Service, fire wardens, SCS personnel and the landowners have keys. Foot travelers such as hunters and hikers are not prohibited, as it is thought such people have a responsibility for preventing fires.

These roads are also used as access roads to remove merchantable timber. This past year piling, mine props, saw logs, and veneer bolts have been removed. By the end of the year these products will have more than paid for the road construction. There hasn't been a fire in the area for over 2 years. The entire area has a woodland management and protection plan that is being followed by the landowners.

This is one of the few places in Delaware where deer are found and it is hoped that, with protection, they will multiply and move into some of the larger wooded areas nearby. Beaver are also found in some of the ditches and canals, along with ducks, egrets, and blue heron. The opening of the roads will increase the bird population, according to the edge theory. Den trees are being left on the islands to house the coon and squirrel population.

The swamp that has lain dormant for many years is now, with fire protection and a woodland management plan, giving a monetary return to the owners in the form of timber and an intangible return in the wildlife and recreation to both the owners and the community.

—HARVEY R. FRANTZ.



H. P. Layton, co-owner of swamp, standing in a road constructed this year.

**HE WAS NO. 1000.**—When Holly F. Miller, Leon farmer, became the thousandth cooperator with the Western Soil Conservation District in West Virginia, M. C. Lewis, secretary, developed a page-one feature entitled "Conservation Progress," illustrated with a 2-column picture of Miller signing the agreement. It captured nearly a column and a half of text and picture space in the *Point Pleasant Register* and, as an eye-catcher, really dominated the front page.

The same plan might well be used in many districts where it could be built around the first, second, third, hundredth, and so on, cooperator who signs up. There is no necessity of waiting for No. 1000.



**GI'S SPEARHEAD CONSERVATION.**—Less than 2 years ago the Jackson County, W. Va., Agricultural Council, representing all agencies operating there, adopted "Agriculture in and for Jackson County" as its slogan. It was agreed "that all agricultural agencies and workers in agriculture in the county would talk the same practices when dealing with farmers in the county; and that they would work up a program and recommend practices that every worker could follow and use in his contacts with farmers."

GI training-on-the-job bobbed up about that time and the council proceeded to put its new program to work with that group and with the Vo-Ag students. It agreed to put emphasis on soil and water conservation. Schools for instructors in these groups were established and field demonstrations were held. Less than 2 years after the council program was launched, the *Jackson Herald*, at Ripley, says: "Results are far beyond expectations."

A conservation farm plan has been established on the farm of every veteran. By next spring every Vo-Ag student will have a conservation farm plan completed for his home farm. In the 160 agreements to date, GI trainees and Vo-Ag students have this record to show:

- 10,475 feet of diversion ditches
- 1,132 acres of pasture improvement
- 2,971 acres of pasture mowing
- 31 springs improved for stock water
- 32 acres of pasture reseeding
- 996 acres of cover crops sown
- 430 feet of sod waterways established
- 12,263 feet of stream channel improvement
- 18 acres of feed and wildlife cover planted
- 12 acres pasture rotation established
- 409 acres of strip cropping
- 170 acres of contour furrows
- 182 acres of clearing
- 2½ acres of tile drainage
- 7½ acres of new woods planted
- 17 acres of pasture mulching
- 10 farm ponds constructed
- 52 gullies controlled
- 531 acres of alfalfa seeded
- 74 acres of woodland protected

The Agricultural Council says, "We feel that all this was made possible in our county only by the planning and understanding that exists when all agencies work together for 'Agriculture in and for Jackson County.'" The council members are: N. K. Speicher, county agent; B. I. Speicher, Soil Conservation Service; F. W. D. Parsons, coordinator for veteran trainees; Lawrence Cavendish and Clyde Hibbs, Vo-Ag instructors; D. J. Rogers, president of Jackson County Farm Bureau, and R. R. Hyre, agricultural conservation program.

**PINES GAIN FAVOR.**—Farmers have changed their ideas as to the kind of trees they want to plant. Fifteen years ago, Jack L. Barrick, work unit conservationist at Philippi, W. Va., recalls, "You were likely to be run off the place with a shotgun if you as much as mentioned planting pine trees on a farm." In those days farmers wanted only locust trees.

Now, says Barrick, "The farmer's cry is that he cannot get enough pines. After wondering a lot about what caused this change in attitudes, I've come to the conclusion that the conifers have sold themselves to the farmers; that farmers have come to recognize that pines are beautiful as well as valuable in covering poor eroded banks, in service as windbreaks, and as a source of future lumber and extra cash income."

**PONDS PEP UP PRODUCTION.**—Farm ponds are increasing efficiency in New York dairy farm operations. "I feel that the increase in milk production since I piped the water to my barn has paid for the cost of constructing the pond," says Paul Rigoni of Pavilion, Genesee County.

"Then too I have fire protection for my buildings, swimming and boating for the youngsters in summer, skating in the winter, and now that we have planted 550 fingerling bluegills and bass in the pond, I'm looking forward to the fun of fishing."

**HIGH UP IN VERMONT.**—Earl Hackett is rehabilitating a largely abandoned farming community in the town of Holland, tucked away in the northeastern part of Orleans County, Vt., next to the Canadian border. There are three more years of work ahead before he and his helpers can get the job done. Hackett, chairman of the supervisors, Orleans County Soil Conservation District, owns several farms, including one where he was born. With the help of other landowners and the town, he has relocated and rebuilt 3.5 miles of road, "built up" to avoid drifting snow. Repair of houses and barns is in progress. Many acres of fertile land in the Calais series have been cleared, smoothed, drained, and seeded down. Recently a bulldozer has been purchased to speed the program.

**SAMPLE SOLD THEM.**—Once a farmer gets a taste of the lasting benefits from soil conservation, he usually wants more. It may take time, but results do come.

Years ago when a CCC camp was operating in that region, some soil conservation practices were applied on the J. C. Baker & Bro. farm, near Greenville, W. Va. Trees were planted in two gullied areas. Both plantings have made good growth and are now 10 to 12 feet high. They are giving real protection to the land and growing into something that will be even more valuable. Part of the pasture was contour-furrowed 8 or 9 years ago. This area is now well-covered with bluegrass and white clover. The furrows are nearly level and are well-sodded. They have served their purpose—holding moisture and soil and plant food on the land so sod could be more easily established.

The Bakers think it's wonderful. Last week they had a conservation farm plan made for the entire farm, Harrison H. S. Cassell, Jr., work unit conservationist, reports in the *Monroe Watchman*.

**FEEDING SOIL MAKES MILK.**—It took Roblee Mason of Pawlet, Vt., only a few days to learn from experience that fertilized pastures add extra dollars to the milk check. He had been pasturing some good milkers on well-fertilized pasture, and they had been producing 1,080 pounds daily. When he turned them into an unfertilized pasture under old sugar bush, they immediately dropped to 880 pounds. After a few days of this disappointing production, Roblee put the cows back on the fertilized pasture. Without hesitation they thanked him to the extent of 1,080 pounds per day, as before.

**THREE-POINT RESULTS.**—In 1946 F. P. Meigs began to apply soil conservation practices to his 150-acre Stone Rows Farm, near Raven Rock, N. J., in cooperation with the Mid-Jersey Soil Conservation District at Flemington. The land is poorly drained and, although the slope is gentle, runoff and erosion had been excessive. He has 67 acres in cultivation and has terraced and contour-farmed four fields containing 35 acres and built 5,000 feet of diversion terraces. Recently he wrote Fred Totten, district chairman, "The terraces and other soil conservation practices established on our farm have accomplished the following: Enabled us to plant crops earlier than formerly and to till portions of the farm which previously were usually too wet to cultivate; eliminated silt from the storm water in the drainage ditches to an unbelievable extent; and increased the yield through the greatly reduced, and in some sections practically nil, soil erosion."

In the remainder of his crop acreage, Meigs will apply terraces and contour strips before his 5-year program is completed. Other practices on his farm include pasture seeding and improvement, and wood lot and wildlife management.



**SEEING IS BELIEVING.**—Effectiveness of “farm face lifting” projects in stimulating interest in adoption of conservation practices by farmers is demonstrated in the Guyan (W. Va.) Soil Conservation District which embraces Cabell, Lincoln, and Wayne Counties.

“As the result of the big demonstration at Rio Grande College farm, across the river in Ohio,” says E. H. Schmidt, district conservationist, “our district has more applications for farm plans and requests for technical assistance and for earth-moving equipment than can be handled. The step-up in applications since the Rio Grande ‘face lifting’ has been striking.”

**SHOW 'EM AND TELL 'EM!**—Hampshire (Mass.) Soil Conservation District supervisors have adopted two new methods for getting new cooperators. On the Owen McNiff farm, along the main highway between Amherst and Northampton, is installed a system of strip cropping and diversion terraces that is beautiful to behold. The supervisors have erected a sign, 4 by 6 feet, at one end of the field close by the road. It carries a colored map of the field showing diversions and strips and an explanatory legend.

The supervisors—Henry Renouf, Arthur C. Bardwell, and Elwyn Fowles—also have bought some books on soil conservation and are circulating them to town libraries. Local newspapers are asked to publicize their availability to borrowers.

**PEACHES WITH CONTOURS.**—When peach orchards are planted on contour, a farmer gets better results from fertilizer, Vinson Reid, Chelmsford, Mass., cooperator in the Middlesex Soil Conservation District, learned last year. In the spring Reid set out 3 acres of land to a new peach orchard after about 1,200 feet of diversion ditch had been constructed and the fields had been contoured by district technicians. In October Carl Clark, SCS planner, noted that trees planted on the contour had a much healthier appearance than similar trees planted in straight rows in a nearby orchard. Also, the contour-planted peach orchard had made nearly double the growth of the second orchard, planted at the same time and receiving the same treatment. Reid says he is convinced that he will get most results from his fertilizer when it is applied to crops planted on contour.

**TALE ABOUT TILE.**—Past errors were uncovered and repetition prevented when Vernon Johnson, work-unit conservationist, Franklin (Mass.) Soil Conservation District, laid out an intercepting tile system to drain a seepage area which was spoiling a 20-acre hay and pasture field on the Galbraith farm in Colrain. Farmer Galbraith was not sure that an interceptor system was what he needed to catch the water before it seeped to the surface. He favored laying individual tile lines straight down the field from each wet spot, but finally agreed to let the technician try his plan. To everyone's surprise, when the digging started, nine distinct lines of tile were discovered running up and down the slope. Someone previously had unsuccessfully tried to solve the problem. When the interceptor system was correctly installed, water immediately began to run into the tile line. The field is now pretty well dried out. Galbraith sank a barrel in the ground and turned the seepage water from the tile into it. Now that the field is drained, and since stock water is available, the pasture can be subdivided for rotational pasturing.

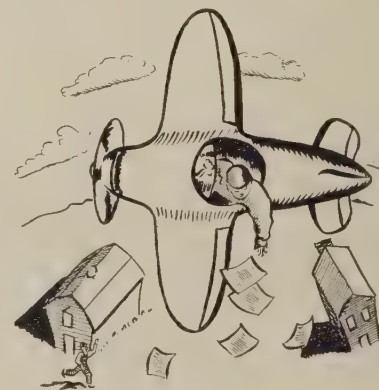
**TIPS ON CONTRACT JOBS.**—Constant work with contractors pays off. “By operating that way,” says Charles W. Turner, district conservationist, Worcester, Mass., “we can clear land with a negligible loss of topsoil, build dug-out ponds for as little as 12 cents per yard, dig ditches for 12 to 15 cents per yard or 10 to 15 cents per running foot, move walls for 25 cents per foot, or bury them for 35 cents per foot.”

Elmer Valentine, conservation aid, worked out an interesting technique with a big operator who was ditching with a bulldozer. One of the biggest drawbacks in using a bulldozer for this kind of work in stony and wet soil is that the bulldozer blade leaves a rather rough and unsightly job. When Valentine recently had a ditch job in land like this, he asked the operator to change to a grubber blade and rough out the ditch, raking out all the stones, stumps, etc. Then they changed back to the straight blade and smoothed out the job, leaving a swell looking ditch.

Turner's aides take a contract operator to a farm, show him the job that is to be done, and know that he understands and will do it well before they leave. This gives the aides more time to get to other farms, because they do not have to stay on the one job all the time. Naturally, drainage work must be checked. They have reduced this to a minimum by having the contractor cut to the proper depth at each 100-foot station along the ditch line while they are there with the level. This is usually an hour's work. After that the contractor can fill in the blank spaces to grade by himself, Turner says.

**GROWING UP WITH TREES.**—Since 1941, 1,379 farmers in Oneida and Madison Counties, N. Y., working cooperatively through soil conservation districts, have reforested more than 1,500 acres. This has involved the planting of more than 1,300,500 seedlings. Last year in these counties, farmers, 4-H and FFA members, and Boy Scouts reforested more than 400 acres. In Oneida County, 27 youngsters set out 27,000 evergreen seedlings. Availability of trees from State nurseries limited the plantings.

## SOUTHEAST



**MESSAGES FROM THE SKY.**—When K. N. Tucker learned that it would be very difficult to get notices of a soil conservation group meeting distributed by mail because of incomplete mailing lists and overlapping routes, he hopped in his plane and, flying at from 200 to 500 feet, dropped mimeographed notices over each house in the community.

Children and adults alike rushed from the houses to pick up and read the notices. Tucker, who is a Soil Conservation Service technician in Morgan County—a part of the Northwest Alabama Soil Conservation District, said that more than 50 adult farmers attended this meeting in the Massey community. Fifteen of these farmers applied for assistance from the district.

Three other community meetings were later announced in a like manner—all with surprisingly good results. One farmer said he walked one-half mile to pick up a notice that fell near his neighbor's house. Seventy-five people attended one meeting, and more than 100 the other two. This was about 95 percent of all the farmers living in the communities. Local people stated that this was the largest number attending any farm meeting there in several years.



**ARSENAL LANDS.**—The Post Engineers of the Huntsville Arsenal in Madison County, Ala., asked District Conservationist Charles N. Kearley to assist them in protecting arsenal lands. It was decided to restrict the use of the arsenal lands to their capability for safe use as indicated by soil conservation surveys.

They are now enlarging the capability maps and coloring them. The recommendation of SCS and the Northeast Alabama Soil Conservation District must be followed by any farmer leasing arsenal land. Already farmers are coming to Kearley's office at Huntsville inquiring about the land capability of portions of this land.

**MAKING FARM PLANS.**—If you want to know what should, may, can, or will be included in a complete farm soil and water conservation plan, you will need to consider six factors to get the answers, according to John Slone, zone conservationist, Spartanburg, S. C.

The capability of the land indicates what *should* be planned.

The farm economy indicates what *may* be planned.

The equipment and supplies available, crop adaptations, and the possibility of applying practices will indicate what *can* be planned.

The wishes of the farmer indicate what *will* be planned.

**FLORIDA BULK-PURCHASES.**—Thousands of acres of land in northwest Florida were seeded last fall to promising new grasses and legumes through the bulk-purchase of seed by soil conservation district supervisors.

Last fall, the supervisors of the Ochlockonee River Soil Conservation District purchased 10,000 pounds of re-seeding crimson clover seed and 15,500 pounds of sweet lupine. The Jefferson district supervisors purchased 14,000 pounds of this clover seed and 7,500 pounds of Kentucky 31 fescue. These were distributed to cooperating farmers.

The Gadsden and Chipola River districts have discontinued such bulk-purchases because enough seed is now being produced locally to meet local demands. The Chipola River district supervisors bought 1,500 pounds of crimson clover seed in 1945 for local farmers. Larger purchases were made in 1946 and 1947. Last fall, 70,000 pounds of seed of this soil-improving crop were planted by the Chipola River district farmers for winter cover. A local supply has developed that will permit extensive plantings, and the district supervisors no longer purchase crimson clover seed.

**ECHOES FROM BAXLEY.**—To members of the Baptist churches of Georgia the gigantic transformation of the 1,300-acre farm of the Georgia Baptist Children's Home last November is a story of dramatic achievement and of practical religion.

At this church farm near Baxley, Ga., miles of terraces were run, old fields were stumped and converted to pastures, two fish ponds and a swimming pool were constructed, new pastures were seeded, roadbanks were stabilized, vineyards laid off, fences built, an irrigation system installed and the entire place made more productive. The superintendent stated that the value of the farm had been increased by \$150,000 in the 1 day.

There is more to the miracle than meets the eye. As every conservationist knows, the greatest problem we have to meet is to secure general acceptance of the soil conservation "idea." Erosion can be licked, we have the men and the know-how, but before we can turn the men, material, and know-how to work at their best we must have public demand. There is no better way to gain public backing than by working through and with the churches of the Nation.

The Georgia Baptist Children's Home supplies an example. The home is supported by the Baptist churches of

Georgia, of which there are about 2,700. A list of donors shows churches giving as little as \$1 or \$2 to the home. But *all* of them give something. And thus *all* of them have an interest in the welfare of the home. To transform the home farm into one of increased usefulness, in the presence of 50,000 people, including all of the officials of the Baptist churches of Georgia, is to sell the "idea" of conservation to a mighty throng.

When the churches and Sunday Schools of our country come to regard the earth as the Lord's footstool, the mightiest of forces will have been recruited on the side of conservation.

The transformation of the Baptist Children's Home farm at Baxley was an outstanding accomplishment in behalf of conservation. Already the Methodists are making preparations for a similar day next spring at Rhinehart College, Waleska, Ga.

—CHANNING COPE.

**SERICEA BUILDS LAND.**—D. A. Grace, cooperater of the Northeast Alabama Soil Conservation District near Scottsboro, knew that sericea lespedeza was holding his sandy mountain land and also supplying good hay and grazing. But he did not realize until recently that it would boost his corn yield from 50 to 136 bushels per acre.

Grace and his neighbors measured 136.64 bushels of corn produced on an acre that had been in sericea for 6 years before it was plowed up in the spring and planted to hybrid corn. On land adjoining this acreage where no sericea had been grown, he gathered only 50 bushels per acre even though it was fertilized and worked the same as the high-yielding field.

"Sericea did it," Grace explained. "The fellow who owned this farm previously had planted several acres of the steeper land to sericea as a part of his soil conservation plan.

"I decided to plow up that 6-year-old sericea last spring, plant it to corn, and see what would happen. I fixed the land, fertilized it with 300 pounds of 4-10-4 and 300 of basic slag, and planted a good hybrid corn. I side-dressed the corn with 300 pounds of a 32.5 percent nitrogen fertilizer. I attributed the high yield to the fact that sericea had improved the land, because the same kind of corn next to this area, fertilized with about the same mixture, produced only 50 bushels to the acre."

The Alabaman now plans to expand his acreage of this deep-rooted perennial legume so as to have several acres of 4- to 5-year-old sericea to plow up and plant to corn each year. "I can't lose," he said. "Sericea makes good hay and grazing and won't let my soil wash away."

—BARRINGTON KING.

**BANKERS HONOR FARMERS.**—Eighty-seven farmers of the Central Georgia Soil Conservation District received special awards from local bankers in the district through the Georgia Bankers Association at a meeting held at Cochran, Ga., early last fall. Farmers were selected for outstanding work in establishing soil conservation practices.

C. B. McAllister, president of the Georgia Bankers Association, Statesboro, Ga., presented to each farmer a framed certificate in recognition of his achievements. Brown Rawlings, agricultural economist of the Federal Reserve Bank of Atlanta, delivered the main address in which he told of the need for more soil conservation work on Georgia farms, and of the part banks are ready to take to help farmers to conserve and build up Georgia's farm land.

R. F. Burch of Dodge County, one of the winning farmers, delivered a speech of acceptance.

Lewis S. Leach, president of the State Bank of Cochran and chairman of the local banking committee, presided.

M. T. Riner, Sr., chairman of the board of supervisors, told of the aims and objectives of the Central Georgia Soil Conservation District. He also cited the accomplishments of the district since its organization in 1940.



Each of the 87 farmers has established some or all the practices called for in his individual farm plan and enough of each practice to make a total of 90 points out of a possible 100. Practices included rotations on good cropland, kudzu or sericea on badly eroded and idle land, terraces with proper disposal areas, pasture improvement, contour cultivation, wildlife development, and in some cases a stock or fish pond.

**RETURNS PILE UP.**—A 1-day face-lifting demonstration helped the Schley Grange of Orange County, N. C., to win a modern new meeting hall in a Nation-wide community contest sponsored by the National Grange and the Sears, Roebuck Foundation.

The demonstration held last spring on the Milton Latta farm, in cooperation with the Neuse River Soil Conservation District, was so successful that it spurred the community to other activities. With \$700 made by selling brunswick stew and barbecue at the demonstration, the women of the community bought game equipment to set up a youth recreation center in the Grange hall. After a meeting with officials of the telephone company, the men of the community agreed to obtain rights-of-way and to cut and set cedar poles for a 15-mile telephone line, and the company agreed to string the wires. Other projects included a home-beautification program and landscaping the grounds of the community church. It was on the basis of these five projects that the 64-member Grange was awarded the national prize in competition with 1,400 local granges in 37 States. "We figured we couldn't lose," explained Master Fred T. Reitzel. "We were working on things that the community needed and the improvements would have been worth the investment, even if we hadn't won the prize."

But the Schley Grange doesn't propose to rest on its laurels. Its secretary, Mrs. Clairborn Wilkerson said, "We're going to adopt as our motto: 'We can't sit down now.'"

## WESTERN GULF

**LANGUAGE SCHOOL.**—Businessmen of Hobart, Okla., believed they could do more about soil conservation if they knew how to talk about it with their customers. Recently, therefore, 100 of them went to soil conservation school. There they learned the language of soil conservation.

On the "faculty" were Kiowa County Soil Conservation District board of supervisors and various agricultural agency representatives. The Hobart Chamber of Commerce sponsored the event, held each night in the Emerson School lunchroom.

Students heard discussions, did homework, and took part in quiz programs. The latter was on conservation terms. The businessmen tripped over such terms as soil organic matter, cover crops, sheet erosion, humus, and others which are everyday language to farmers and ranchmen around Hobart.

Leland White, president of the chamber of commerce, who also was a student, opened the school. Sid Barnes of the chamber's agricultural committee served as principal. Leon J. "T-Bone" McDonald, assistant State conservationist, was the first teacher.

McDonald was followed by J. Bryan Gentry, chairman of the district. Gentry explained what a soil conservation district is. He emphasized that the soil conservation district is not a part of any agency of government, but rather is a local unit sovereign in its field. Gentry also spoke of the accomplishments of the Kiowa district.

Questions based on McDonald's and Gentry's discussions were tossed at two teams chosen from the students. Barnes fired the questions, and faculty members judged the answers. The audience was called on to answer ques-

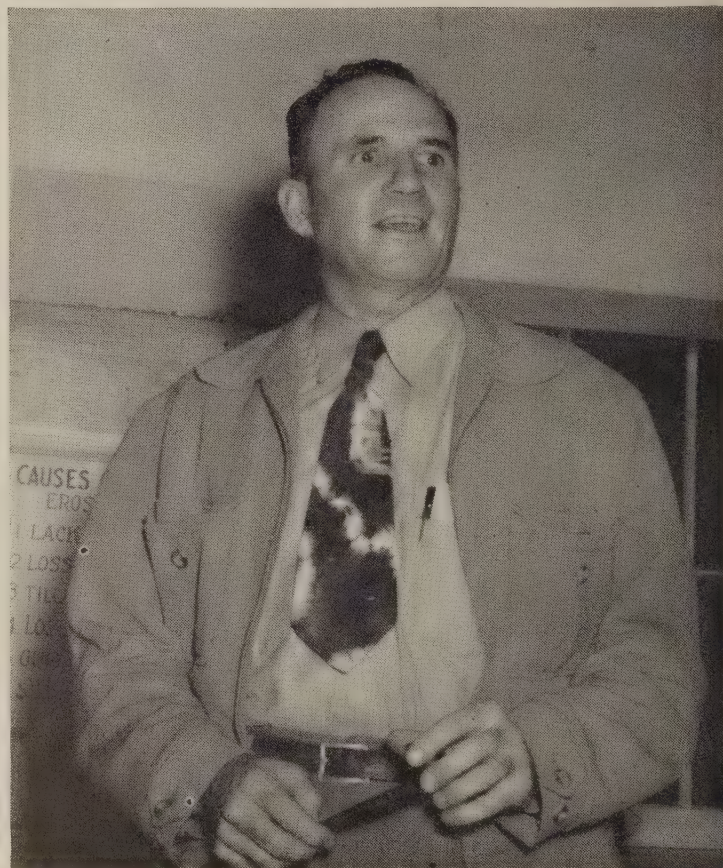
tions the contestants couldn't handle. The competing teams called themselves "Water Erosion" and "Wind Erosion."

The second night of the school found Edd Roberts, extension soil conservationist, talking on soil and land classification. He said that the best use for one kind of soil or another is quite likely to be the most profitable use also. With him on the program was Russell Cocanougher, district field representative of PMA, who discussed the soil conservation phases of the PMA program.

Wesley Chaffin, extension agronomist of Oklahoma A and M College, discussed soil-improving crops.



School principal was Sid Barnes.



J. Bryan Gentry, supervisors' chairman.



At recesses there were coffee and doughnuts.

Credit for the idea back of the school is due Fred Whittington of the Hobart Soil Conservation Service office, McDonald, Barnes, and Gentry. For a year or more, they have been telling each other how helpful it would be if everyone around Hobart knew the right language.

—DAVID O. DAVIS.

**THEY'RE TELLING TEXAS.**—Under the leadership of their State organization, district supervisors in Texas are acquainting the public with the district set-up. They are taking advantage of every opportunity to make people as conscious of soil conservation districts as they are of counties and school districts.

Soil Conservation District Day was scheduled for the first time at the Fort Worth Fat Stock Show in January and at the Houston Stock Show in February. Ribbon badges identified district supervisors and cooperators at the shows.

**THEY KNOW GRASS.**—Fifty-nine boys competed in a grass-judging contest sponsored by the Brazoria-Galveston Soil Conservation District at the 1948 Brazoria County Fair. These boys, members of 4-H clubs and FFA chapters of the district, spent 2 hours studying the grass plants and marking their answers.

Three boys tied for first individual prize with 59 out of a possible 60 points. Tenth place had a 2-way tie with 53 points.



**COWS DO THE CLIPPING.**—Irrigation ditches must be properly maintained. Maintenance includes shaping as well as weed control. One method is to establish grass on the banks and in the ditch itself. The grass keeps the ditch from eroding and the banks from fluffing. It assists in controlling weeds. It also may provide grazing.

On recommendation of SCS technicians working in the El Paso-Hudspeth Soil Conservation District, Jim Surratt, manager of the Schuster farm near Fabens, Tex., planted grass on several irrigation ditches in 1947. He fenced the ditches and grazed them with cattle. He liked this type of maintenance so well that he planned to plant grass on additional irrigation ditches.

Here's what he reports: He grazed two cows and calves on the grassed irrigation ditches from April to September 1948. He sold the cows and calves for a net profit of \$75. In prior years it cost him \$618 to maintain the same ditches by hand. Therefore he had a profit and a saving in costs of \$693.

—J. H. BARKSDALE.

**TEXAS GRASSES.**—The 1948 State Fair of Texas had a new and different kind of exhibit that proved so popular it will be made a regular feature. It was an exhibit of live forage grasses.

Occupying a space 100 feet long and 30 feet wide, the exhibit consisted of 5 plants each of 40 different specimens

of range and pasture grass, representative of every part of Texas.

The exhibit attracted continuous attention from the time the fair opened until it closed. Many farmers and ranchers asked practical questions and jotted down the answers in notebooks. Ranchers who have become grass conscious through their soil conservation program seemed pleased when they could identify the various plants without reading the labels.

Vocational agriculture teachers used the exhibit to impress FFA members with the importance of grass. Even cityfolk were attracted to the exhibit, many women declaring they had never before realized the beauty of some of the prairie grasses. A New York City youngster said the exhibit was the prettiest thing he had ever seen.

**BIG EVEN FOR TEXAS.**—Texans, of course, may not think it unusual, but the record-breaking fish production in J. W. Friday's farm pond at Winnsboro, Tex., is really an outstanding achievement. Friday is a cooperator with the Hopkins-Rains-Wood Soil Conservation District. Three years ago his pond was stocked with fish and managed according to advice from local SCS technicians. Mr. Friday was given suggestions on fertilizing the pond and told particularly to fish it hard. He has carefully followed those suggestions.

In 1947 the Friday family ate 63¾ pounds of fish caught from their quarter-acre pond, and in 1948—up to October 6—a whopping 170 pounds! At that rate, production runs to 900 pounds per acre. Friday's young son deserves credit for the statistics. He kept records as part of his 4-H Club work.

The Fridays have caught nine ¾-pound channel cats and some 3½-pound bass—bigger ones got away! Bluegills have run over half a pound. Friday's pond originally was stocked with crappies, in addition to the other species, but he has found them to be a nuisance and is removing them as rapidly as possible. During last summer Friday seined 18 pounds of stunted crappies, and later an additional 65 pounds of crappies and miscellaneous other species. During the seining, 150 pounds of edible-sized fish were returned to the pond.

The Fridays have used 100 pounds of 4-12-4 fertilizer per month during the seven warmer months of the year. They keep a first-class growth of algae in the water through the fertilization program.



An afternoon's catch. Young Friday keeps an accurate record of kinds, numbers and weights—indulges in no "tall tales."



**LOUISIANA LOBLOLLIES.**—A cutting of loblolly pine on an 8-acre plantation of the Sutton farm near Gibsland was significant in Louisiana agriculture for a number of reasons. It virtually marked the end in northwest Louisiana of the old, wasteful practice of wiping out a woodland in one cutting. It proved again the value of using the land for what it is able to produce best. And it showed how land properly used can benefit many people of an area.

It was the first time that a tree plantation was cut in the Saline Soil Conservation District which covers parts of Bienville, Claiborne, Webster, Red River, Natchitoches, and Winn Parishes.

When Fred F. Sutton and brothers bought the farm in 1929, the 8-acre hillside now forming the plantation had been in cultivation for 25 years, having been cleared of its virgin oak and pine. The Suttons continued to cultivate it to row crops until 1937. By then it had become so badly eroded and depleted that clean-tilled cultivation was no longer profitable. Then the Suttons turned to soil conservation as a means of saving their land and making the farm as productive as possible. Youths in a Soil Conservation Service CCC camp planted the 8 acres to loblolly pine.

Now erosion on the hillside has been controlled and the 8 acres are again productive. The first cutting produced six carloads of pulpwood that netted the Suttons \$28 an acre. The timber stand is still intact and through natural reseeding and conservation management will be permanently productive.

"In negotiations for the sale of the pulpwood, no one ever mentioned a clean cut of the stand," J. C. Sutton said in emphasizing the new attitude of farmers and lumber mills toward woodland management. "We all took it for granted that the woodland would be cut on a selective basis. Besides, everyone knows better than to talk about a clean cut to me."

SCS technicians assisting the Saline Soil Conservation District showed the Suttons how to measure and mark the trees that should be cut. One acre, set aside as an observational plot to record tree growth, yielded 473 of its original planting of 1,113 trees, their diameters averaging 4.9 inches at breast height.

From an economic point of view, woodland management of this sort benefits not only the farmers but many other people and whole communities in the woodland area. All the money stays at home. The farmer benefits, the contractor who does the cutting job benefits, and so does the local mill that turns the wood into paper products. Railroads share in the benefits by transporting the wood to the mills. All of this local activity produces employment for many people. For producing benefits that are reaped in your own locality, you can't beat a properly managed farm woodland.

The three Sutton brothers (Fred F., J. C., and E. W.) are carrying out a coordinated soil conservation program on their 1,700-acre farm. Other woodlands on the farm are managed on a sustained-yield basis like the 8-acre plantation. To use the whole farm for what it is best suited, the Suttons have turned from row-cropping to beef cattle and woodland production. Pastures and meadows produce grazing and feed crops.

—JIMMIE P. MAXWELL.

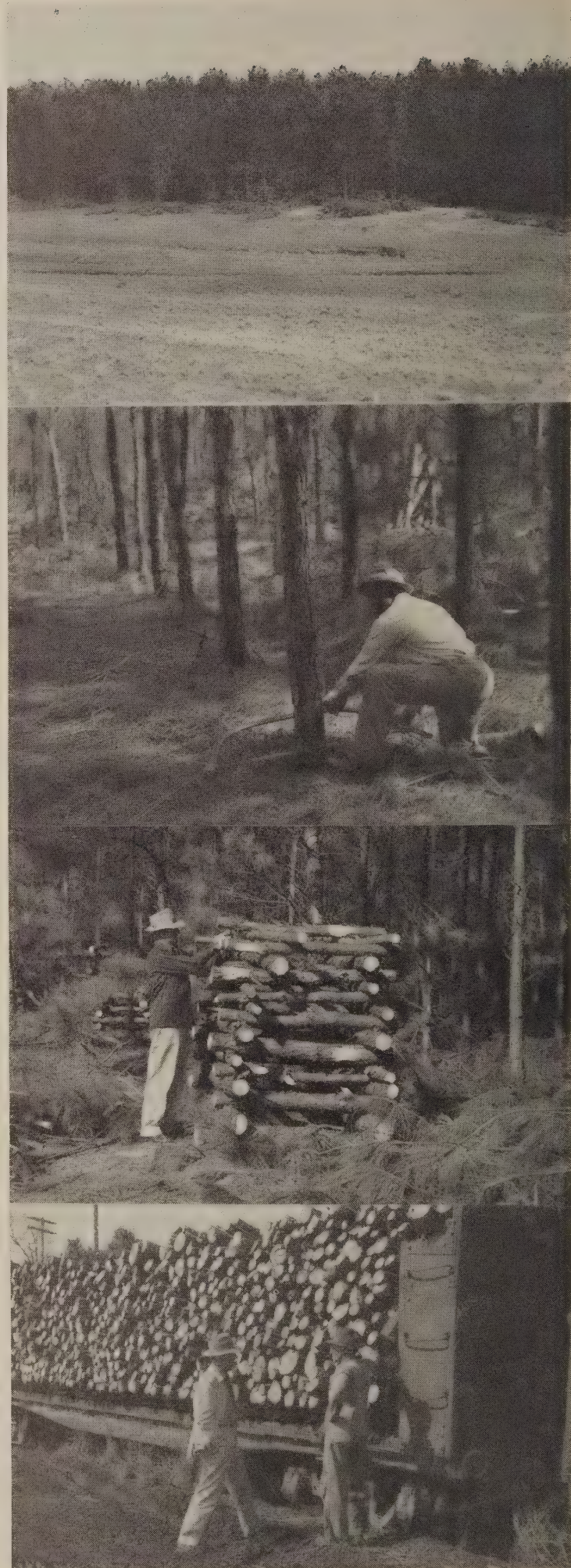
#### TOP TO BOTTOM.

Excellent stand remains after first cutting, hardly noticeable being the six carloads of pulpwood that have been removed.

Cutting a marked tree on the Sutton plantation.

Jimmie P. Maxwell measures diameter of pulpwood stacked in pens after first cutting.

Railroad car inspector checks carload of pulpwood from Sutton plantation.





An aerial photograph of a terraced hillside. A winding road or path runs across the terraces, and a small bridge crosses a stream or ditch in the lower part of the image. The terraces are clearly visible as horizontal bands of different shades of brown and green.

March  
1949

*Big Day in Missouri*

# SOIL CONSERVATION

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WELLINGTON BRINK

Editor

Art Work by  
W. HOWARD MARTIN

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**FRONT COVER.**—Soil Security Day centered at the Hope Brothers 380-acre farm near Pocahontas in Cape Girardeau County, Mo., last fall. The "day" dramatized the work of the Cape County Soil District, with which the farm owners cooperate.

Nearly 25,000 conservation-curious Missourians came to be "shown." They eased out of their parking places at sunset bug-eyed as a result of having watched what they were convinced is literally *the greatest show on earth*. Many of them were already familiar with the miracle of soil conservation on a gradual and piecemeal scale, one or two practices at a time, on their own farms or those of neighbors. But most of them were unprepared for the 200-piece battery of machinery, the great volunteer army of skilled workers, the vast range of operations. Technical planning and other assistance were supplied by the Soil Conservation Service.

Accomplishments included the construction of terraces, diversion terraces, terrace outlets, subsoiling, seedbed preparation

(Continued on p. 180)



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# Tall Wheatgrass

COMES TO THE

*Platte Valley*

Six-year-old stand of tall wheatgrass on H. M. Fishwood farm east of Humboldt, Nebr. Here the grass is used as part of a mixture in the lower end of a waterway.

By LAIRD G. WOLFE

FROM the seashores of Turkey to the alkali flats of the Platte River is a long migration, but one foreigner has made it and with no problems of naturalization.

The foreigner, tall-growing tall wheatgrass (*Agropyron elongatum*), is fast becoming a useful citizen by furnishing pasture and hay on land previously removed from a production status because of irrigation seepage, high water table, or wet alkaline conditions.

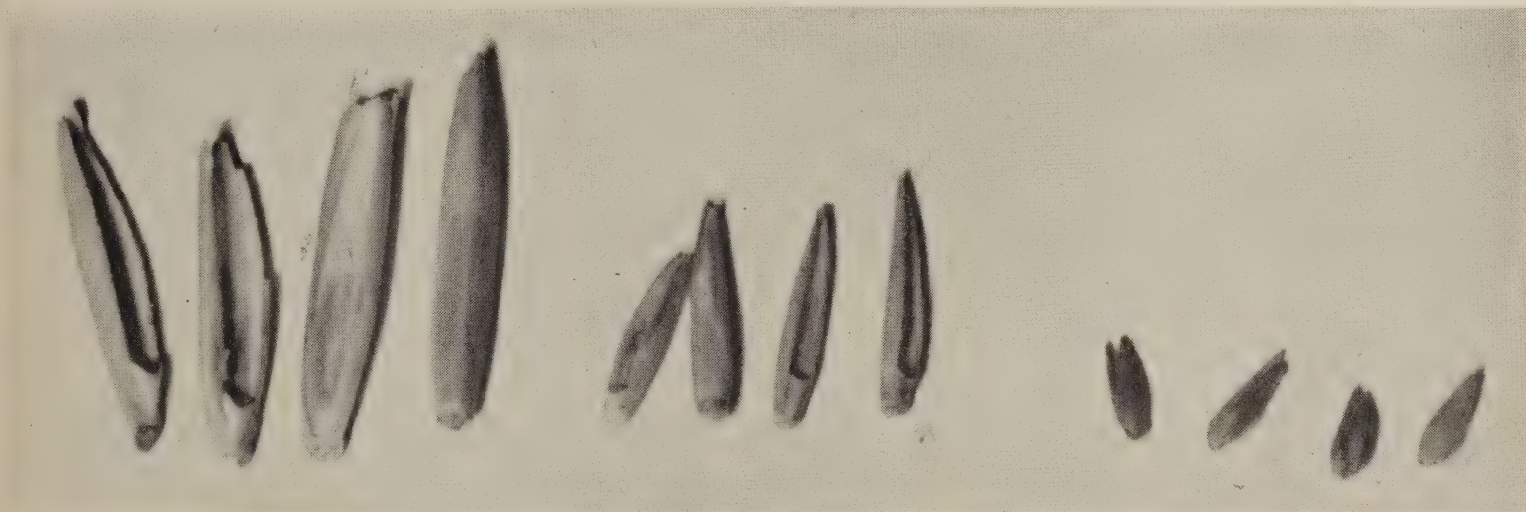
Results in the Platte River Valley show this grass to be making good with a one-two punch. It has thrived in the nursery on a site of a type where intermediate wheatgrass could not survive.

NOTE.—The author is observational nurseryman, Soil Conservation Service, Waterloo, Nebr.

It has produced a profit from seeped and alkali land that was a liability, crowding out weeds at the same time. It has furnished a longer grazing season than other cool-season grasses, and it is liked by livestock.

Plant explorers found tall wheatgrass during the early 1930's growing in salt marshes in northern Turkey not far from the shores of the Black Sea. Their notes show that a seed collection was made "along the road to Bursa on low flat land." This would be about the same latitude that divides Kansas and Nebraska.

Tall wheatgrass is a somewhat coarse, erect perennial with a bunch-type growth. An abundance of long basal and stem leaves make it a high forage producer comparing favorably with the rest of the wheatgrasses in this respect. As the name implies, the mature plant is tall, often reaching a robust 5 feet and more under irrigation in the West, or under normal rainfall conditions in eastern Nebraska. The seed head is an



Enlarged portraits of seeds, left to right: tall wheatgrass, crested wheatgrass, reed canary grass.



elongated spike similar to, but longer than, heads of intermediate or western wheatgrass.

Like other cool season grasses, tall wheatgrass does most of its growing in the fall and spring. One of its most desirable characteristics, however, is the lateness of maturity. It is still green a month after crested wheatgrass, intermediate wheatgrass, or brome have become dormant during midsummer temperatures. Seed is ready to harvest in August and even at this late date foliage is green. Winter growth of tall wheatgrass in Nebraska exceeds that of smooth brome or other wheatgrasses.

Fall and spring foliage is soft and luxuriant, resembling foliage of intermediate wheatgrass. But as the plant matures, a coarseness develops so that by late summer tall wheatgrass is tough and harsh. In spite of this condition, trials in Idaho (cooperative studies of the University of Idaho Agricultural Experiment Station and the Soil Conservation Service Nursery Division) showed tall wheatgrass in hay stage to be 66 percent palatable, or about equal to either alta fescue, Canada wildrye, reed canary grass, or wheat hay.

Perhaps the outstanding advantage of tall wheatgrass, particularly in the Northern Great Plains, is its tolerance of wet alkaline conditions. This grass has produced well in plantings in the Platte Valley from eastern Nebraska to Torrington, Wyo., on land that had been considered worthless for cash crops. At the SCS Nursery at North Platte, Nebr., a row of tall wheatgrass planted in 1940 has produced seed every year since then, while a row of intermediate wheatgrass planted at the same time and in soil with the same high alkaline conditions died out by the second year. Soil samples taken along this 8-year-old row of grass show a very high alkaline content (pH of 9.6 in the top 8 inches, 10.1 in the 8- to 16-inch depth, and 9.9 in the 16- to 24-inch depth).

Although not too much is known about its resistance to cold and drought, tall wheatgrass seems to stand up well under both conditions. Reports from Idaho and North Dakota indicate that its forage and seed production are good but that it does not come into full production as fast as some other grasses that have been tried. These reports come from areas where annual precipitation averages 9 and 16 inches, respectively.

Few problems are encountered in planting tall wheatgrass. The large seed flows readily through almost any type of grain drill. Early fall plant-

ings on a well-packed seedbed have given best results. And in medium- to light-textured soil, seed drilled at from one-half to three-fourths inches in depth has produced the best stands. Seeding rates have varied from 6 to 10 pounds per acre when drilled in solid stands and about half that when planted in rows to be cultivated for seed production.

Fortunately, this grass is a good seeder. Tall wheatgrass planted in 40-inch rows at the SCS Waterloo Nursery in eastern Nebraska in September 1946 yielded almost 400 pounds of clean seed to the acre in August 1947. This yield was made without the use of fertilizer or irrigation. The same fields yielded over 200 pounds of clean seed to the acre in 1948 in spite of a dry spring. These acre averages are not from small plot trials but from the production of at least 15 acres.

Either a binder or a combine may be used to harvest the seed. The seed ripens evenly and does not shatter readily, but best quality seed has resulted from binding and threshing. This is particularly true when growth is heavy, because then the tough, green leaves tend to "slug" a combine cylinder and a quantity of moisture-laden bits of leaves and stems are elevated along with the seed.

The excellent seeding habits of tall wheatgrass—both high production and ease of handling—are helping to meet the demand for seed. In 1936 SCS nurseries in the Great Plains had 4 ounces of seed. The first few years were spent increasing this amount and testing the grass under different conditions. The 4 ounces grew, and from 1943 to the present time almost 15,000 pounds of seed have been distributed to soil conservation district cooperators by the nursery at Waterloo.

The bulk of this seed went to growers in Kansas, Nebraska, and Wyoming, where it was planted for both trial and further increase. Many of the plantings were made in poor locations—problem areas which the cooperator had given up as past reclaiming. Numerous farmers have found that tall wheatgrass put these same problem areas on the black side of the ledger for the first time when they sold seed the grass produced. Seed prices have been high, averaging from 75 cents to \$1 per pound.

One of these men is Rudolph Rutar, near Torrington, Wyo., cooperating with the North Platte Valley Soil Conservation District. Rutar has 4 acres of wet alkali seep below an irrigation ditch



which he planted to tall wheatgrass in December 1946, using a beet drill and planting rows 20 inches apart.

"The grass did not sprout until the following spring," Rutar remarks, "and the weeds were so bad the first year that the grass could not be seen without parting the weeds over the row. Weeds were mowed once the first summer and cultivated twice during dry weather. Those were the only times you could get in that field. The grass grew about 6 inches high the first year.

"The second year the grass started before the weeds and is rapidly crowding them out. The stand appears to be thickening up. Between 300 and 400 pounds of seed were harvested off the field.

"Cattle preferred to graze the regrowth after the seed harvest to grazing alfalfa. They have also eaten all the straw from threshing. We have never cut any for hay, but see no reason why it would not make good hay. We do know it is a very good spring and fall pasture, at least.

"We plan to seed at least 5 more acres for pasture," Rutar concluded. "We think it has great possibilities not only for pasture but to control weeds in wet alkali areas where very little else grows. The area we seeded to tall wheatgrass had never produced a successful cash crop since we owned the farm. I believe a grass has finally been found that will produce a successful crop under wet alkali conditions."

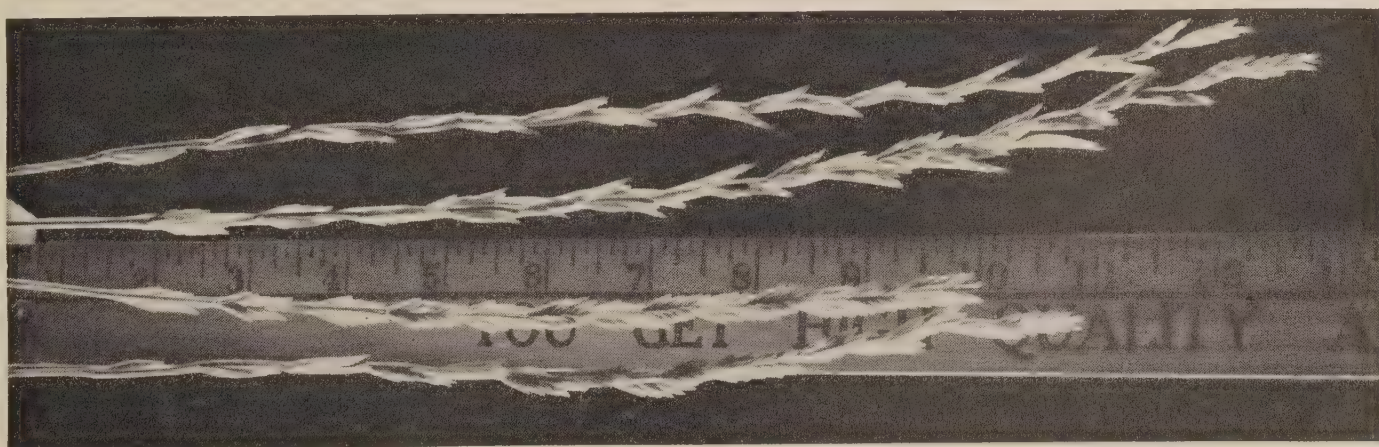
Soil conditions in this field were inspected by Harold Bindschadler of Laramie, Wyo., State soil scientist for the Soil Conservation Service. He reported that "the water table apparently fluctuates from season to season. The profile was very moist throughout the upper 3 feet and free water was found at about 4 feet. It is assumed

the ground water invades the root zone during late July and August and recedes early in September. The soil developed from lower Brule or upper Chadron. The lime content is very high and the concentration of soluble salts has caused this land to be useless for the production of domestic crops. Kochia and poverty weed were the only plants produced until the tall wheatgrass was introduced."

At Scottsbluff, Nebr., where irrigation farming has been practiced over a relatively long period of time, the problems of alkali and high water table present themselves on farm after farm. The supervisors of the First Commissioner Soil Conservation District are aware of the value of tall wheatgrass and have leased land and made plans to plant this grass in rows for seed needs of their cooperators.

Farther east in the Platte Valley at Kearney, Nebr., Horace J. Cary, cooperating with the Buffalo-Ravenna Soil Conservation District, planted 8 acres of tall wheatgrass in 1945. The area planted was afflicted by both high water and a saline condition. In 1947 Cary harvested 2,000 pounds of seed from his planting. He stated that prior to the seeding of tall wheatgrass on this land there was practically no crop production of any kind. He is encouraging farmers having similar soil and water conditions to consider the grass for hay or pasture.

Tall wheatgrass is not a cure-all. It won't replace the immense acreages of some of the established grasses. But when you need a special-use grass for your problem areas, give a thought to the long grazing season, the high forage and seed production, and the alkali or wet, heavy soil tolerance of tall wheatgrass.



Eight- to 12-inch spikes, showing length of seed heads when wheatgrass is grown in rows for seed production.



# DISTRICT PROFILE

## CHAMNESS of California

Albert N. Chamness for more than 30 years has been growing citrus fruits and avocados near San Marcos, in southern California.

Chamness appears to have discovered a west coast fountain of youth in his little valley in San Diego County. He, too, is sun-kissed and rugged. He lends to the problems of land and water a high enthusiasm, a well-stocked technical knowledge, and a fine sense of humor.

Chairman of the soil conservation district in which he lives, Chamness also is vice president of the California State Association of Soil Conservation Districts and represents the Pacific Southwest on the board of directors of the National Association of Soil Conservation Districts.

Mr. and Mrs. Chamness celebrated their golden wedding anniversary in 1945. They operate a 126-acre ranch in the San Marcos-Richland-Twin Oaks Soil Conservation District. They have 70 acres of citrus which yield an average of 20,000 boxes a year. At the present time Chamness is developing 40 acres for avocados, and you'll often find him on a tractor or irrigating.

Chamness has held many civic and public offices, but he has always been close to the land. He and his wife started farming near Richmond, Ind., in 1902 when they purchased 180 acres of creek bottom land. Soon they found that 15 acres of their best land flooded every spring.

He and his neighbors, whose lands were likewise flooding, formed a drainage district and dredged the channel of the stream as a defense measure. "The first year I raised enough corn on my reclaimed land to pay the cost of dredging," he recalls. "That was my first experience with conservation."

He reflects now how much easier it would have been for him and his neighbors to have gotten the job done if soil conservation districts had been in existence at the turn of the century.

The Chamnesses lived in Indiana until 1917, when they moved to Whittier in Los Angeles County, Calif. A native Hoosier, Chamness had attended Danville Normal College, Danville, Ind.,

and the Ball Business College, Muncie, Ind. While still in Indiana, he had served as a township trustee, a member of his county's board of education, and two terms as treasurer of Wayne County.

He purchased a 30-acre orchard, 25 acres of walnuts and 5 acres of citrus at Whittier and began anew in agriculture and public service. In this California community he served as a bank director, director and president of the North Whittier Heights Citrus Association, and manager of the Whittier Extension Mutual Water Co., which supplied water for the citrus belt. He also was city councilman and mayor of Whittier. But these activities didn't occupy all his time.

Shortly after he moved to Whittier, Chamness was elected a trustee of Whittier College, an office he held for a quarter of a century. During that time he also served as secretary and as president of the college's board of trustees and for 10 years as the school's treasurer and comptroller.

While mayor of Whittier, he represented the city in its efforts to preserve the city's water rights and took a lead in retaining water rights for land-owners in the valley. He also found time to serve as director of the sanitation district for East Los Angeles County for 4 years, and in 1918 was food administrator of that portion of the county.

In 1926, before Lake Henshaw Dam was built and water brought in, much of San Diego County's potential farm land was undeveloped. But Chamness's attention was drawn to its rich agricultural possibilities.

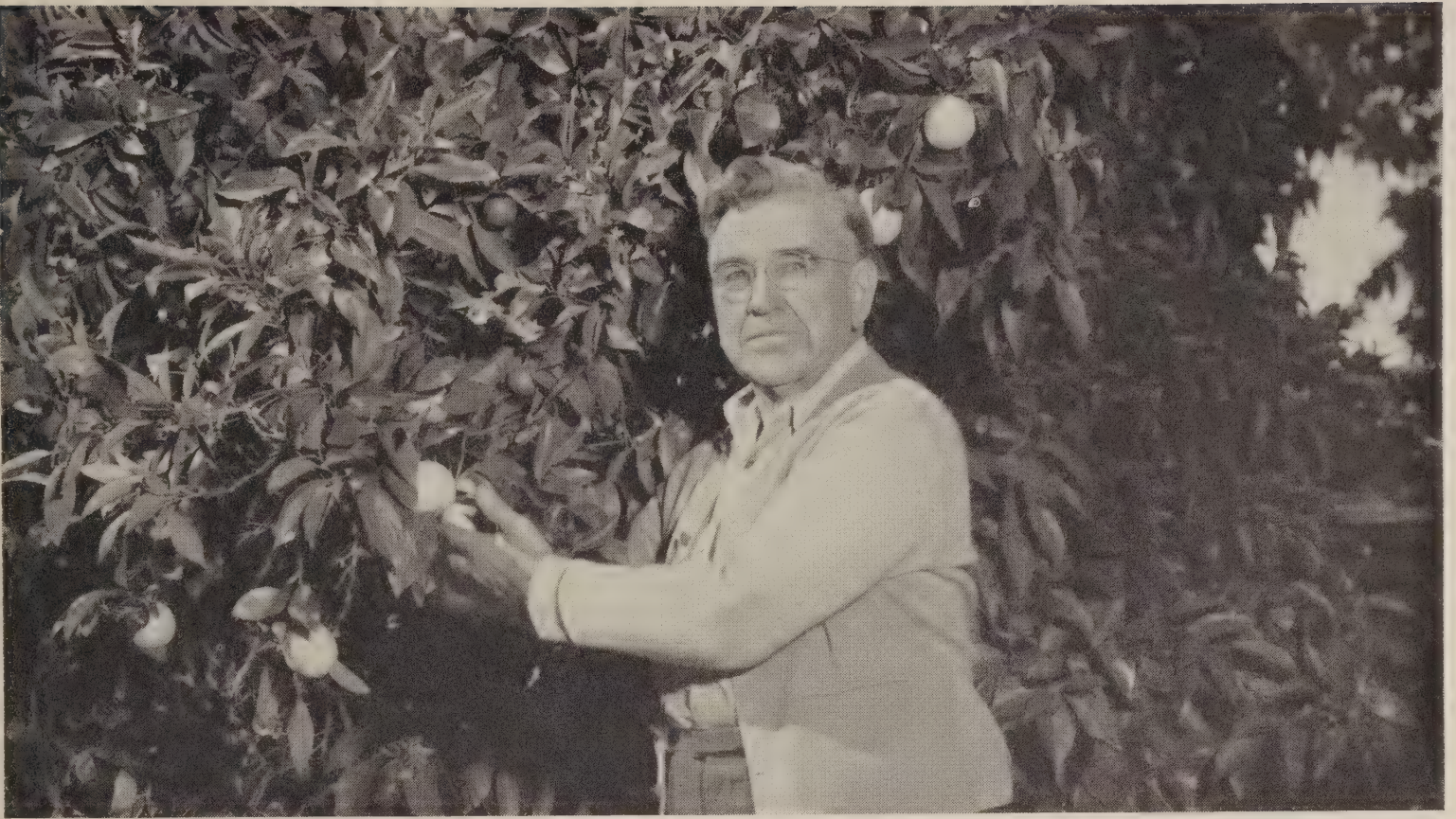
In 1931 he bought 86 acres in Twin Oaks Valley, near San Marcos. On this tract were 40 acres of citrus. He and Mrs. Chamness moved to the ranch in 1935 and there faced another water problem.

Flood waters swept through the orchard and homestead, depositing gravel and stones. Nearly 4,000 trees were in the path, and he recalls that many young trees were damaged or killed. On one occasion he spent more than \$3,000 to remove debris.

Chamness called for help from the nearby Vista CCC camp in 1938. Soil Conservation Service engineers, in cooperation with the county, drew up plans for drainage of the valley, but the camp closed just as the project was getting under way.

The committee of 30 farmers that had served in an advisory capacity with the CCC camp took the lead in forming the San Marcos-Richland-





**Sun-kissed Californian, big man in big State: Albert N. Chamness.**

Twin Oaks Soil Conservation District. This district, the third in California, was organized March 17, 1941. In its organization efforts, the committee had the support of the county board of supervisors and the local Grange. Chamness was made president of the district directors, and he has served in that capacity ever since. The San Marcos-Richland-Twin Oaks District was instrumental in the formation of the San Diego County Association of Soil Conservation Districts and in the organization of other soil conservation districts in the county, which now number 11.

The project started under the CCC camp program was taken over by the district, and in cooperation with the county it was completed to the satisfaction of the growers.

"The work done under guidance of the district board of directors who used the technical help of the Soil Conservation Service has been of value to everyone in the valley," Chamness says. "Not only has it prevented flood damage to private land but also it has protected county roads and reduced their maintenance costs.

"Trees previously damaged by flood and high water have since been removed and replanted. Before the new drainage ditch was built and I put on my soil conservation program, there were some years in which my orchard could not be

tended until June or July because of wet conditions. Now I can work my orchard the year around."

Mrs. Chamness shares her husband's enthusiasm for soil and water conservation. Her hobbies are antique furniture and gardening. Their ranch home is in a natural setting of sycamore trees to which she has added exotic and unusual plants to produce a beautiful landscape. The Chamness yard has won prizes in a number of garden contests.

Mr. and Mrs. Chamness have two children, a daughter, Helen Bussell, and a son, Oliver Vaughan. Their son has spent 16 years in South Korea. A chip off the old block, he has supervised an agricultural program in 20 Korean communities.

Chamness is a past president of the County Development Federation, a past director of the San Diego County Chamber of Commerce, a past president of the San Marcos Chamber of Commerce, a director and past president of the county Farm Bureau, a past master of the San Marcos Grange and a member of the State Grange. He also is on the board of Palomar Junior College, which has a large agricultural department.

—F. GLENNON LOYD.





## ≈ STRIP CROPPING ≈ *Made Easy*

By JOHN P. JONES and JAMES M. WISE

**I**N the Northumberland Soil Conservation District, Sunbury, Pa., contour strip cropping is regarded by technicians as easy to install and by farmers as indispensable for erosion control. While such items as contour plowing and cultivation with short rows in the middle were once regarded as obstacles, today they are accepted as essential to the success of strip cropping.

Here are a few reasons for the success of strip cropping in the Northumberland District.

### RUNNING BOUNDARY LINES

Boundary lines for contour strips are laid out nearly as fast as a man walks. One man with abney level and stakes takes the lead and a second man, generally the farmer or a person not so ex-

perienced with contour lines, follows along, from stake to stake, and serves as a stadia rod or sighting point. After setting the first stake, additional stakes are placed in the contour line by sighting back on the last stake. Experience has made it possible for a man to walk a contour line very closely, and it is usually necessary to move up or down the slope only a step or two to place a stake on the level or contour. By this method the cumbersome use of a tape measure to lay out parallel-sided strips is eliminated.

After the first line is run, a second line is run back across the field and so on until the whole field is completed. Two men lay out and plow in contour strip boundaries on 60 to 70 acres with about as much ease as 25 to 30 acres of parallel-sided strips.

Contour lines for strip boundaries are run through standing corn and other crops. This is nearly impossible with parallel-sided strips because a tape cannot be dragged over a growing

NOTE.—Dr. Jones is chief of the regional agronomy division, Soil Conservation Service, Upper Darby, Pa., and Mr. Wise is district conservationist, Sunbury, Pa.



crop to establish the lines. With the contour method it is, therefore, possible to spread the work over a longer period each year and utilize technical time more efficiently.

### WIDTH OF STRIP

In the Northumberland District the width of strip is largely regulated by the contour boundaries. By following contour lines, strips generally narrow to 70 to 90 feet on the steep slopes and widen to 125 feet on the more gentle slopes. To keep strips from being too narrow at any point, judgment must be used in starting a contour line. Experience shows that the strips must be at least 60 feet wide or the farmer may get into trouble turning his equipment.

### SHORT ROWS

At first local farmers seemed to think that strip cropping was multiplying the number of short rows to which they had been accustomed. To avoid short rows, a few even went so far as to insist on parallel-sided strips. In these cases they found correction strips a worse evil than the short rows, and that erosion was not controlled. When they changed to contour strips with both edges on the contour, they found to their surprise that the number of short rows was scarcely any more than they had become accustomed to in the old square field system of farming. They also found that strips with both edges on the contour did a better job of erosion control.

Clark Hower, after changing from parallel-sided strips to strips with both edges on the contour said, "Now I have the erosion stopped. Short rows are no problem in plowing, cultivating, or harvesting."

Short rows in the middle are an obstacle only in the case of potatoes where the ridge row method of cultivation is used. Ridge rows make turning of spraying equipment difficult. Where parallel-sided strips are used, highly ridged rows prevent water from breaking through and causing gullies. Management of the correction areas is often a problem. Sometimes they can be managed by planting potatoes with short rows on the side, but often it is necessary to leave those areas in hay. Some farmers have used strips with both edges on the contour by planting the potatoes in the long rows on each side of the strip and planting the point row area in the middle to corn or truck crops.



Point rows in middle of contour strip at time of last cultivation. Note that very little corn has been run over during cultivation. Farm owned by Raymond Shaffer, Dalmatia, Pa.

Diversion terraces, sod waterways, and rotations are used to supplement strip cropping. Diversion terraces are confined to steeper cultivated fields. Rotations are of the common dairy type with more hay and pasture on steep slopes and more grain on gentle slope, where needed. Natural waterways are carefully maintained in sod.

The art of plowing, planting, cultivating, and harvesting contour strips has been worked out by the Northumberland County farmers with advice of the farm planner. Starting on the strip boundaries and plowing to the center is alternated with starting in the middle with the point rows as a guide and plowing toward the outside. By this plan the turning of the land toward the outside one time and toward the center another, prevents any significant movement of soil or any abnormal unevenness of the surface.

Planting, cultivating, and harvesting are always started on the outside and contoured toward the center. In all these operations the short rows create somewhat of a problem, but farmers after a little experience can handle them, even when using such large equipment as the combine and two-row corn picker. In seeding operations, it is necessary to do a little overlapping at the point to avoid skipping some of the area enclosed. In cultivating corn with a tractor, turning is done at the end of the point rows in the middle of the field almost as easily as at the ends, with little or no damage to the crop. The tractor operator has no difficulty learning how to do this. With short rows in the middle the farmer can harvest corn with a corn picker more easily than when they are on the side.

Contour strip cropping has been reduced to simple terms. As a result, it is making headway on a large number of farms.



# Los Angeles COLLEGE UNIQUE IN NATION

By HERB BODDY

**T**HE Clarence W. Pierce school of agriculture heads a back-to-the-land movement in Los Angeles. Its students learn by doing. Nearby are the citrus fruit groves and dairy ranches of the rich San Fernando Valley.

Students of the Winnerka Avenue junior college follow the soil conservation doctrine in handling range, pastures, and croplands.

The school embodies a fresh idea worked out by the Los Angeles Board of Education to train GI's and other young men and women in farming. Here on the campus itself they try their hand at making the soil pay. After only 1 year, some Pierce students are ready to stake their future in agriculture.

When the Pierce School opened its doors a year ago more than three-fourths of the students were veterans. Dr. E. B. Angier, who directs the school's program, said that attendance nearly doubled when class work resumed this fall. Expansion of teaching quarters and dormitories will let registration run to 350 from now on.

One of the few agricultural junior colleges in the country to be operated by a large city school system, Pierce is blazing a new trail. It is unique because there is a well-organized plan to guide its faculty and students in the care and use of the soils that make up the school's acreage. Pierce is believed to be the first school of its type in the Nation to draft a blueprint showing acre-by-acre use of its land.

Like many Los Angeles County farmers and ranchers who have joined hands to combat soil and water losses and improve their crop yields, the Pierce school is a cooperator with the San Fernando Soil Conservation District. And like thousands of landowners the country over, the

college patterns its operations on a farm conservation plan.

Putting the college's agricultural work strictly on a conservation basis is recognition by the city school board of the importance of soil erosion as our top land problem.

Situated at the hub of the great Los Angeles County agricultural empire, Pierce junior college fills a long-time need. Few States can offer more opportunities to farm-minded youth. Today Los Angeles County is out in front as one of the richest agricultural counties in the country. It has 12,000 ranches which produce more than 100 million dollars in farm products yearly. One-fourth of the Nation's entire fruit and vegetable crop comes from here.

Pierce's farm faculty uses down-to-earth methods. Their teachings hinge on the doctrine of good land use and soil care. They find that soil conservation is the easiest and safest way to get complete use of the school's lands.

Technicians of the San Fernando Valley staff of the Soil Conservation Service, along with other agricultural agencies, are cooperating closely with the faculty. The Service worked out the college farm conservation plan with the city school board. In it the Service included a soil analysis, recommended soil- and water-saving measures, and outlined the field and crop layout for each acre. Each piece of land is marked for use up to its peak safe producing power.

Angier says the college already has undergone impressive changes in appearance. But he notes it has a long way to go on its 12-year program.



Five students talk soil with Neil Lynch, an instructor, left, and E. J. Kotlar, SCS technician, kneeling.





In a little more than a year students have planted an 18-acre orchard, half citrus and half deciduous fruits. With the help of SCS technicians, the school has revamped its irrigating ditches to get better use of its water supply. Some 17,000 feet of piping for sprinkler and furrow irrigation have been installed. This raises the total of irrigated acres to 75.

Several irrigated pasture sites will be seeded with 3,000 pounds of pasture mixtures. Ten tons of commercial fertilizer is to be applied.

Other fields are staked out for hay and cereal crops. Higher, sloping lands will be used for annual winter range and dry-land pasture for the college's beef cattle. Lighter soils are being farmed to truck crops.

Students like the grass-roots tactics which teachers use in classroom instruction. But the daily down-to-earth training they are getting in farm chores, planting and care of crops, animal

#### CAMPUS SCENES.

**Top, left.**—Pierce College lads divide their time between classroom and field. Indoors they study such subjects as farm machinery, dairy production, nursery practice, and animal husbandry.

**Top, right.**—E. J. Kotlar shows two former GI's how to lay out a contoured field.

**Bottom, left.**—Student ditches contoured orchard for irrigation.

**Bottom, right.**—Pierce "farmers" learn to care for both dairy and beef animals. One of their favorites is a \$5,000 sire given the school by Sears Roebuck Foundation.

husbandry, and all-around farm work has the strongest appeal.

Each college entrant may major in the phase of agriculture that interests him most. The college grants associated science degrees for successful completion of a 2-year course in any major subject. The lists of majors include dairy production and management, poultry production, field-crop production, and ornamental horticulture.



New subjects this year are horticulture, farm machinery repair and operation, landscape gardening, soil and water conservation and land management.

The stock, such as poultry, hogs, rabbits, horses, dairy and beef cattle, lends a homey, farm-like touch to the Canoga Park campus. The college owns a number of top-grade animals, including a \$5,000 Hereford sire given the school by the Sears Roebuck Foundation.

The registrar's rolls show that students come from the far corners of Los Angeles County and from many far away points. Some Pierce students are farmers' sons. Others are city bred. A number, mostly veterans, run farms themselves and are taking refresher courses. The college provides ways by which some students can work their way through a farm course.

Several older students are laying plans to enter various phases of the agricultural industry when school ends next June. But a large portion of graduates are expected to continue their training in senior agricultural colleges.

Summing up, Angier says, "The time of farming by trial and error is past. Agriculture is a high-speed, streamlined business today. Our new farmers have to get in step with the trend to make a go of it.

"With 10 percent of employed persons in California working in agricultural industries, it is important that we begin to train our future farmers, here in Los Angeles. We can now offer a future to the youth of our community in farming fields.

"We believe we are doing the right thing in running our school along soil conservation lines. The earlier we plant the good seeds of conservation farming in the hearts of our youth, the better for the country."

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#### FRONT COVER (from p. 170)

plus the use of limestone and commercial fertilizers for terrace outlets, pastures and meadows, contour plowing, a contour plowing contest, stock pond construction, pasture renovation, creek channel straightening by use of draglines, dusting by use of a helicopter, fence removal and construction. Other practices included closing gullies with bulldozers, construction of concrete soil-saving dams, woodland work such as marking trees for harvest, taking out weed trees and merchantable timber and the replanting of seedling stock. Land was cleared by a bulldozer, merchantable timber worked up into logs with motor-operated saws, and, finally, lumber turned out by a portable sawmill.

Wildlife received attention. Some 2½ miles of multi-flora rose fence were planted.

# NEW CONCEPT OF OLD FARM

By ALEXANDER NUNN

EDITOR'S NOTE.—Last summer Managing Editor Alexander Nunn of *Progressive Farmer* and Southeastern Regional Conservator T. S. Buie were attending a church meeting. After one of the sessions, they ate dinner together and the conversation turned to Nunn's farming operations near Loachapoka, Ala. At Buie's request, Nunn repeated in the following article what he said about "our home farm." As managing editor of a widely read farm magazine, Nunn is a leading authority on Southern agriculture.

THROUGHOUT his life, my father was a great believer in protecting his land with good terraces. The old family estate he took over in 1916 was gullied, galled, and grown up in bushes, plum thickets, and young sweetgum trees. In the 30 years that followed, I believe he did a better job of holding the soil on the land than any other farmer in Lee County. The terraces, which he built in the early years of that period and gradually improved, had become so much a part of most of the fields that there was no longer any washing of any kind. A few outlets here and there, never fully corrected, caused some small damage during severe rainstorms.

The other most striking thing to me since my father's death 18 months ago and since my brother and I have taken over the old home farm has been the realization that the farm was never organized to make maximum use of every acre. As a matter of fact, I think I fully appreciated all during my father's lifetime the work he did in holding the soil; on the other hand, I never fully realized how much more he might have made from the farm, his enthusiasm for soil conservation being what it was, if he had had it better organized. Perhaps most of us, who think we are keeping abreast of the times, haven't ourselves begun to grasp the need for and the possibilities in planned and fully working farms until these last 5 or 10 years. I doubt whether 10 years ago I would have visualized how we might put every acre to work on the home farm and on another part of the family estate, adjoining, which I myself own.

I think perhaps I ought to give credit where credit is due and say that you folks in the Soil



Conservation Service have done more to help me visualize the possibilities than any other one group.

In the case of the home farm, I think it is not reflecting on my father to say that he always thought largely, insofar as crops were concerned, in plantings from year to year. There are many sound explanations for this, but in an old plantation system accustomed to annual sharecropping, it was almost too much to expect that even our better farmers would have thought far beyond an annual basis. It would have been rather remarkable if the system had not directly affected the thinking of all of those who were a part of it.

My father never placed his principal dependence on the cotton crop, but he was never able to make up his mind to cut loose from it until the shortage of labor became so severe during World War II. He always produced all of the things that the family needed for a good living, sold some fruit, considerable in the way of truck crops, and a good bit of livestock.

In undertaking to shift the farm over to a vegetable, hog, and potentially a dairy program, we are finding that we not only must change cropping systems on most of the fields, but that we have got to rearrange fences and pastures and try to put to work many acres (in a fair to good state of fertility) that have been producing almost nothing. Under present price levels, my brother and I believe that we can see the possibilities of \$8,000 to \$10,000 gross from the 117 acres. Papa would have thought us foolish if we had ever even suggested that the farm could produce that much every year.

We have realized that the change-over is an undertaking of 3 to 5 years and that furthermore we will have to improve and expand and change gradually along with the carrying on of the regular farm work.

When we actually put to work in their proper places all the new methods, the new crops, and the new equipment that are now available to us, the South literally is going to blossom like the rose.

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**MAINE KEEPS INFORMED.**—The first issue of the yet-unnamed quarterly "Letter" to the membership has been put out by the District Supervisors Association of the State of Maine. It is full of "family" notes and helpful suggestions. "Now is the time"—reads one paragraph—"for supervisors to subscribe to SOIL CONSERVATION Magazine for themselves, school libraries, vocational agricultural teachers, and others."

# WAKING UP SLEEPY ACRES

By FRED M. SHAW

**S**PURRED on by the demands of a rapidly expanding dairy and beef program, farmers in the Kaufman-Van Zandt Soil Conservation District in east Texas have started turning thousands of idle acres into improved pastures. The fact that an estimated 90 percent of the pasture land in the district is growing nothing but needlegrass gives some idea of the magnitude of the task. The entire area, especially the gray-land section, is badly depleted and many pastures have only a small carrying capacity for a short time in the spring.

Among the farmers who have led the way in showing how this impoverished soil could be made to support Bermuda grass and clovers—especially black medic and lespedeza, with Dallis grass in the moist bottom sections—is Lon Akin of Poetry Community, about 5 miles north of Terrell. For his contribution to the cause of soil improvement through planting his farm to hairy vetch, Akin was named outstanding farmer in the district for the Fort Worth Press 1947 Save the Soil and Save Texas Program.

"I just decided that if vetch was good for the cultivated land, it was bound to be good for pasture," Akin explained. "The land, like most of it in the district, was all poor. Even the bottom land was low in organic material where the already-depleted uplands have washed down on it. And the cultivated land turned into pasture wasn't any good until it had been improved. It wouldn't carry a cow to 15 acres."

Akin changed over from cotton and corn and began planting vetch on his Bermuda grass pasture about 4 or 5 years ago, using the two-row equipment on his tractor. One year he actually planted 90 acres in this manner. He drilled superphosphate with it and added 0-14-7 mixed fertilizer, a practice he has continued ever since.

"Before I planted vetch," he states, "that Bermuda grass was so tough the cows wouldn't eat it. It's remarkable the difference that just 1 year

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NOTE.—The author is conservationist with the Texas Power & Light Co., Dallas, Tex.



of vetch makes." He has gone over all his pastures with this legume, about 350 acres of which have a Bermuda grass base.

Although he plants approximately 45 acres of corn and 10 acres of cotton on land which is properly terraced and tied down, Akin's program is essentially one of seed and livestock. From one plot where the land hadn't been grazed, he got more than 300 pounds of vetch seed on what he maintains was the poorest land in the county. That was the time he harvested late and some of the seed had scattered. He got 350 pounds per acre from some vetch that had volunteered. On the average he gets a yield of 250 to 350 pounds per acre, and last year harvested a total of approximately 25,000 pounds which he sold to farmers in the district. "It pays off better than hiring labor for row crops," he says.

Akin believes he gets better production out of oats as a nurse crop; however, last winter the rye used as support stood through the cold weather whereas some of the other grains were killed out

completely. The rye also increased the yield of vetch by holding it up off the ground, thus enabling the sunlight to mature a higher percentage of seed. This year he plans to plant about 80 acres to abruzzi rye.

"If you don't get a seed crop," he points out, "vetch will still pay in better grazing and soil improvement." In addition to hairy vetch, he has planted 1,000 pounds of kobe lespedeza and 800 pounds of common lespedeza in improving Bermuda grass pasture and is trying a little lovegrass for his permanent pasture. He believes Bermuda plus lespedeza plus vetch is the only thing for an upland pasture combination. The vetch comes early, the lespedeza later, and the Bermuda in between.

Starting his pasture-improvement program with about 100 acres, Akin used part of his profits to add to his holding each year until he now has approximately 450 acres in vetch. This year he built a stone house, complete with cellar and garage, in lieu of procuring additional acreage.



Lon Akin (left) was "outstanding farmer" in Kaufman-Van Zandt Soil Conservation District in 1947 Fort Worth Press 1947 Save-the-Soil Program. Here, with D. C. Lerner of SCS, he looks over his hairy vetch and abruzzi rye in his pasture.





Cattle graze continually on waterway site on Liston farm north of Terrell: vetch, white Dutch, and bur clovers, Bermuda and Dallis grasses. Inspecting: Technician D. C. Lerner, Cooperators J. C. Wells and Arthur Liston.

When he began his pasture program, 15 acres were required to carry one cow. It now takes an average of 6 or 7, depending on the length of time he has owned the land and had it under improvement. He feels that on this improved land he has reached the half-way mark in his goal to carry 1 cow to not more than 2 acres. During the past winter, he ran 60 beef cows and 20 calves on 1 field of approximately 40 acres of vetch and rye. Had it been a normal winter he feels that the field would have carried these cattle without any additional feed.

"There is definite danger of overgrazing," Akin warns. "People who overgraze haven't any pasture or any good producing cows either. Overgrazing will start erosion because the land will 'ditch up' where the cows trail as quickly as it will between rows of cultivated land."

His terracing program has been completed and all terraces empty on well-sodded pastures developed along the natural drains in his fields. These areas, which were formerly considered problem areas, have turned out to be the most profitable ones on the farm.

Each year Akin sees his work pay off in cash income, lush pastures, and fat, healthy cattle.

### HOLT TO WORLD CONFERENCE

Ernest G. Holt, research specialist of the Soil Conservation Service, is in New Zealand during the period of February 2 to 22, attending the Seventh Pacific Science Congress. The Congress is meeting in Auckland and Christchurch at the invitation of the Royal Society of New Zealand.

Holt was appointed delegate to represent the National Research Council by Chairman Detlev W. Bronk. He also carries a commission from the Washington Academy of Sciences, by designation of President F. D. Rossini. When Hugh Bennett, chief of the Service, found it impossible to attend, he asked Holt to take his place. There he will participate in a symposium on land classification and utilization.



# WHERE IS YOUR SPADE?

BY J. B. DOUTHIT

IN MY REMARKS today won't you please think with me about:

The gardener who wanted to take his spade to heaven with him when he died.

The farmer who blindly tries to obtain a decent living from a heritage of misused and abused land.

The teacher who would give more to the child than information canned, stereotyped, and long lost from nature.

The child who brings the first flowers of spring to his teacher; and in turn is the recipient of things unreal, but who longs to know how the flowers grow.

The rural minister wise in theology and ethics but very ignorant of the reasons why his flock is slowly scattering under the impact of short crops and the urge for the better things of life.

The district supervisor, perhaps willing, but lacking in vision and activity.

What do we see when we plan a farm, when we build a terrace, or lay out a drainage ditch? Is that the end?

To be sure, we see the gullied hills, the soggy flats, the decaying buildings, the unproductive land. Yes, and also, abandoned homes, schools, churches, and even communities. Very often these depress us, blind us, dim our vision. Look at them, yes! But also look on down the road.

We were born with an inherent love of nature. There is also in each of us a desire to serve others. Regard for material things and selfish urges may have nearly rubbed out these traits. But do they not occasionally flit across our minds?

To a few men—and women, more frequently—this urge to serve predominates. These people are the ones that men rise up and called blessed. To them eternity represents a continuation of the good things of this world. They are our ideals, or heroes.

Real satisfaction comes from a job well done. Success is rarely achieved with one master stroke. Here a little, there a little, eventually brings it

to us. If we would succeed at our job we must realize this. Great men are not made accidentally. Their parents, their school, the church, their neighbors, all contributed to their lives.

A barren field is brought back into profitable use. A man is given new hope. A community is started on the way to better life. If we can have just a small but successful part in these achievements, we shall surely want to ask Saint Peter to let us bring our spade with us into the "great beyond." Let us hope—yes and pray—that he will not say to us, "Why do the hills and fields of South Carolina hunger and thirst? Why do they lie there naked and eroded? Why do the people go undernourished and complain?"

Life is full of interesting things; and, yes, many problems are there, too. Some people solve them and enjoy their days to the fullest. Others use up our resources and wonder why they were born. The little child brings the first flower of spring to his teacher. In return she reads to him from books filled with abstract facts, dry as one's tongue when he makes his first speech. The child longs to know why those flowers bloomed first, why their stems are so short, why they always grow on the sunny side of the road. Or perhaps he wonders why his calf did not grow so fast as the one belonging to his neighbor. Why doesn't his teacher tell him? We love the things we know the best. We do not mistreat the things we love.

Perhaps if we talked with the teacher and showed her some of the basic things of nature, our stock in trade, we would find that she too is longing to get away from the abstract. Concrete evidence, living illustrations, observations from nature will open many idle brain cells and probably stop so many from being closed at the age when the owner is just beginning to be capable of really learning.

We often ask where a person is from. We really want to know what his early environment was. Do we ever stop to think that we are making our own environment? Tomorrow's citizens grow up in the surroundings that we make for them. What will they think of their community if we neglect the things with which they are most familiar and glorify the bright lights of the city?

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NOTE.—Mr. Douthit is president of the South Carolina Association of Soil Conservation District Supervisors. This is an address he made before State conferences of Soil Conservation Service technicians, Clemson College, S. C., August 4, 1948.



What is there to revere about a run-down farm, a church building that sways with the breezes and haunts you with its lonesomeness of neglect?

The country church is the last remaining hope of keeping a community tie in many areas. The school has already gone to town. The country doctor and the most ambitious citizens left hurriedly years ago. All too often the preacher lives in town and knows little about the real problems of his country church or rural community. He is long on saving souls and theology, but short on the knowledge of saving either our land or our bodies. Do not censure them too hastily. That has been their training. Most often they eagerly grasp the things we can tell and show them. They can become our most able allies in showing the way to the things that make better farms and farmers, better homes and churches, better social and moral surroundings.

Yes, we make our environment whether we work at it or not. Shall future ages unveil monuments of virile farm communities; or shall they point sadly and despairingly to areas of barren land, abandoned homes, schools, and churches and hurry away to the bright lights of cities, there to take their vitamins and sleeping pills, follow demagogues and dictators, and eventually destroy the way of life that we have known and loved? The soil conservation district properly developed with your help can provide many aids to better living.

Our job is planning farms, running terrace lines, surveying drainage ditches, saving land, and building land. We must keep at it. Doing all we can, making progress every day. Achieving, but ever aspiring to do more and better at our appointed task.

Look squarely at our mistreated and misused land, but do not let the sordidness of these material things dim our eyes, blind or depress us. On down the road there is a boy, a girl, a young married couple. They may not even see us, but they are beckoning to us just the same. That terraced land, that restored hillside, that once soggy area now drained, will nourish and support them. They and their children's children will know a better life. The same transit that leads our vision unerringly to the target also leads on into time. The target must be seen if the contour line is correct; but it is what we see on beyond that makes our job worth while.

The artists paint their pictures and plan their instruments. But there are others just as truly artists as they. Any job well done vibrates the achievements of the doer, if he has done his best, just as truly as the greatest symphony. Art is the process of doing something well.

Great pictures have been and are yet to be put on canvas. Their contribution to civilization is worthy of much praise. These, as well as the artist who paints them, will be second to the picture and the artist who grooms and restores our land.

His picture will be a landscape. On it will be clear streams, productive land, comfortable homes, Where shall we leave our spade?

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## A NATIONAL LAND POLICY

**ADOPTED BY THE SOIL CONSERVATION  
SOCIETY OF AMERICA, AT ITS ANNUAL  
MEETING IN DECEMBER 1948**

The conservation and wise utilization of natural resources is fundamental to the economic and social welfare of all people.

Land, including soil, water, and the dependent living resources (cultivated crops, forests, wildlife, range lands, etc.), is recognized as basic wealth and it must be treated in such a way that it will be made secure for permanent high productivity.

It is essential, therefore, that a National Land Policy be developed and supported by the American people, and the Soil Conservation Society of America recommends that such a policy be declared as:

**ALL LANDS SHOULD BE USED IN A MANNER WHICH  
WILL INSURE ITS CONTINUED AND PERMANENT  
MAXIMUM PRODUCTIVITY AND VALUES.**

To adopt and effect such a policy, the following requirements must be recognized nationally:

The conservation of soil, water, and interdependent renewable resources involves scientific study and guidance, necessitating the bringing together as a single function many facets of a vast number of scientific fields; therefore, the science of soil and water conservation is intricate and complex.



An inventory of all physical land resources and their condition is of primary importance to serve as the proper guide to the utilization and treatment of these resources.

Specifically, the widespread adoption of a sound land policy should comprehend the need for conservation, development, and utilization of land and water resources for: (1) sustained and improved agricultural production, (2) forest protection, regrowth, and sustained yield, (3) prevention of erosion and flood damages to safeguard land from overflow and siltation, (4) protection of community and industrial water supplies, (5) maintenance of underground water sources, (6) development and installation of irrigation and drainage as needed to extend appropriate land use and conservation, (7) protection and maintenance of fish and wildlife in accordance with proper land use, (8) development and utilization of areas most appropriately suited for needed recreational purposes, and (9) protection, and, in certain cases revegetation of areas suited to range utilization.

The ultimate goal in land use is a complete soil and water conservation program on every farm, ranch, forest, and watershed throughout the country.

To functionalize the above land policy and the specific principles involved, the Soil Conservation Society of America recognizes that:

The conservation of soil and water by efforts of the individual landowners and operators is the most important contribution that can be made to the carrying out of this land policy. Locally and democratically organized groups of landowners and users are the best known vehicles for carrying out soil and water conservation programs designed to improve and perpetuate the productivity of our basic natural wealth—the land.

Private ownership of land is, for the most part, the most suitable system under which a National Land Policy can be effective. It is recognized, however, that good management, public interest and welfare necessitate public ownership and administration of certain land areas.

The technical, educational, financial and other services necessary to the adoption of a fully coordinated land use program should be thoroughly integrated and cooperatively performed, to carry out this land policy and all its principles.

Private, corporate, and allied groups have a major responsibility in obtaining adoption of this land policy and in the conservation of soil and water.

A workable method of carrying out coordinated programs of land use, soil and water conservation requires the joint and cooperative efforts of the Federal, State, and local governments which are, or may become, engaged in these endeavors. It is also necessary that the administrative forces charged with such activities be given explicit responsibilities for contributions to such coordinated programs.

In a great measure, our natural economy, our democratic process and our national security are dependent on the future conservation and use of our basic natural resources. These proposals,

therefore, are made in the interest of the public health, safety, and general welfare of all the American people.

**BAYOU STATE LEADS.**—January figures show Mississippi topping all States in paid subscriptions to *Soil Conservation Magazine* with 2,950. District supervisors attest the magazine's vital part in getting conservation on the land.

## REVIEWS

**PLOWSHARES INTO SWORDS.** By Arthur P. Chew. Harper & Brothers. New York. 1948. 277 pp. \$3.

In this book the author develops an economic theory as the cause of wars. The basic struggle between industry and agriculture is at the root of most of the world's armed conflicts. This struggle takes place between nations and within individual nations. Chew points out that there must be a balance between factory output and agricultural output. Factories must have agriculture from which to draw raw materials and food supplies, and as a market for finished products. Agriculture depends on industry for its operational machinery and for markets. When these two are in balance, particularly between nations, there is little cause for armed conflict. Chew points out, however, that industrial nations, which are normally in a much better position than agricultural nations to wage aggressive war, must have sufficient agricultural resources for their needs. If they do not have them, two choices are open: (1) They may obtain the needed resources by force of arms, or (2) they may develop trade with agricultural nations.

Chew points out that the superficial explanation of some wars is presented to the people as ideological. This was shown clearly in the last World War when the differences in the ideologies of fascism, communism, nazism, and democracies were emphasized. To increase the interest in a war, leaders often resort to personification. Thus, we saw Hitler, Mussolini, and Hirohito built up on one side, and various more admirable leaders on the other side. The appeal here was for laymen unfamiliar with the basic issue of industry versus agriculture. Chew points out that the balance between industry and agriculture must be achieved throughout the world or war will surely recur. His solution is where he has difficulty. He does point out clearly, however, that there must be more freedom of world trade.

Imports, exports, and price adjustments get some attention. The author's thought concerning two prices for products, one local and one export, is not new, but he manages to marshal a great deal of logic for this system. Surplus goods must be placed on the world market at a price that market can afford. I particularly liked the chapter on conservation and trade practices.

The book has many stimulating ideas, and even though



it is hard to read in spots and difficult to understand, particularly if you are not an economist, it is well worth one's time and effort. Chapter 4, where the early philosophies of Veblen are compared with his later ones, seems to me a bit beside the point. Not knowing who Veblen was in the first place, I find it confusing and of small interest.

I can recommend "Plowshares into Swords" to anyone interested in agriculture, and particularly to those who are concerned with agriculture's part in maintaining world peace.

—GROVER F. BROWN.

## FOREIGN NOTES

**Mexico.**—The First National Soil Conservation Conference in Mexico was held on November 17, 18, and 19, 1948 at Celaya, State of Guanajuato. Celaya is in a good agricultural area on the Central Mexican Plateau and is about 125 miles northwest of Mexico City. There was a very good attendance of technicians, administrators, and farmers from all Central Mexico. The conference was carried on under a committee consisting of Nazario S. Ortiz Garza, Minister of Agriculture, Luis Diaz Sufante, Governor of the State and Lorenzo R. Patino, Chief of the National Department of Soil and Water Conservation. Resolutions adopted were to the effect:

That the government should assist farmers in acquiring machinery, fertilizer, and seeds.

That there should be an intensive reforestation campaign in Guanajuato.

That there should be a national campaign for soil conservation.

That local committees for conservation of soil and water be set up.

That soil conservation districts be established.

That an experiment station for soil analysis be established in the Bajio.

That a fertilizer industry be established in the State.

That there be experiments with more profitable crops.

That prices of electric power be reduced for pumping irrigation water.

That courses on conservation be taught in public schools.

That sound trucks be used to teach soil conservation.

That steps be taken to obtain scholarships in soil conservation abroad.

That the Federal Government continue its policy of guaranteeing prices for agricultural products.

**Brazil.**—Plans are being made for a soil conservation congress to be held in the State of Sao Paulo some time late this February.

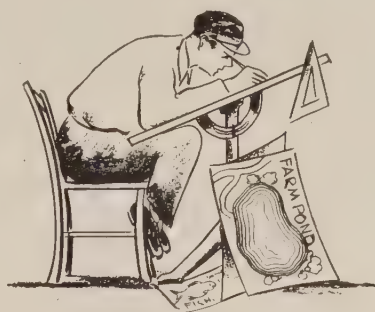
**Africa.**—The Inter-African Soils Conference was held at Goma, Belgian Congo, last November 7 through 16. It was organized by the Government of the Belgian Congo, with representatives present from many British, French, Belgian, and Portuguese colonies of Africa.

Discussions, with recommendations, of means to promote soil and water conservation occupied a prominent place. Among the resolutions:

Permanent regional committees for soil conservation and utilization should be organized. These committees will be made up of the technical representatives of each of the territories included within its sphere of action, which will meet at least once per year. Their principal role will be to determine the most favorable regional conditions for the achievement of their objectives and to propose a common plan of action.

It is essential to foresee, in the not far future, the possibility of the enactment of legislation for the purpose of carrying out soil conservation. These measures would be applicable to lands cultivated by non-natives as well as to those which are individually or collectively the property of natives.

## NORTHEAST



**POND FOR ZION.**—When farm-land owners around Zion, Md., wanted a community pond, SCS technicians designed one for a site in a swampy area from which J. C. Gambrell had very little pasture use. It is oval, a half acre in area, 3 to 9 feet deep. It is filled from three springs on the nearby Eugene England farm. In case of fire, the roadway leading from the highway to the breast of the dam will enable firemen to drive in, lay a hose, and begin pumping.

The pond will be stocked with fish and also will be used for swimming. Gambrell plans to clean up a wooded tract just above the pond site and make a recreational park.

**PASTURE PROGRESS.**—Nasi Tamposi, dairy farmer of Nashua, N. H., has proved that pasture capable of carrying a cow per acre can be developed by clearing, seeding, and fertilizing woodland and brushland.

Tamposi had been barn-feeding the year round because little pasture was ever available. Three years later his Pine Hill Road farm was judged one of the top three in the Hillsboro County Green Pastures contest.

In the summer of '46, Tamposi asked the Hillsboro County Soil Conservation Sub-District for a conservation farm plan. His principal aim was to develop good pasture. Eleven acres of woodland and brushland were cleared, bog-harrowed, and seeded with rye, and manure supplemented by superphosphate was applied. Next spring the rye was plowed under and a pasture mixture of Ladino, red and alsike clovers, and timothy and redtop was planted. This received manure and an application of a complete fertilizer. Oats were sown and cut for hay after serving as a nurse crop.

Since then Tamposi has cleared five more acres of woodland and brushland which he is converting to pasture and has purchased a third tract which he proposes to handle similarly. He has built many rods of permanent fence to control rotation grazing. He clips all pastures and spreads the droppings. To supply more water for his livestock, Tamposi is building a farm pond that can be reached from any pasture.

**SCIENCE CONCURS WITH EXPERIENCE.**—Contour farming on hill farms in central New York puts money into farmers' pockets. Stanley Greene, district conservationist, reports on 1948 tests made at the Marcellus station in cooperation with the Cornell agricultural experiment station. He notes that the same crops were planted on identical soil types with the same topography, at the same time this year, one lot in three contoured plots and the other in three plots planted up and down hill. Oats planted on contour averaged 49 bushels per acre, compared with 45 bushels when planted on slope. Wheat yields on contour were 40 bushels per acre compared with 34 per acre on slope.

These tests have been made five successive years. In previous years, with other crops, the results were: 56



bushels of mature shell corn per acre on contour, and 32 bushels on slope; potatoes, 361 bushels per acre on contour and 304 bushels per acre on slope.

Yields tests were made at three points on each plot—top, middle, and bottom. Yields at the bottom were higher than at top or middle. Plots planted up and down hill showed the greatest yield differences between top and bottom, indicating that more soil and water had come down hill when plantings were on the slope.

**DOLLARS COME BACK.**—Forty York County, Pa., farmers spent \$10,000—\$250 each—applying conservation practices last year. This money is expected to be returned through additional income from increased yields. Increasing use of heavy equipment is rapidly bringing conservation farming methods within the financial reach of all York County farmers, says Blish.

**SOAKED LAND RESCUED.**—For years, Herbert H. Crumb had lost the use of 10 acres of his 130-acre dairy farm at Oxford, N. Y., because water settled there. He needed the land to produce feed for his 75-cow herd. When he took his problem to the Chenango County Soil Conservation District at Norwich, Laverne M. Stark, district conservationist, and Francis J. Wolf, another SCS technician, recommended a drainage ditch. Crumb, former Endicott, N. Y., superintendent of schools, approved and put the job under way with the use of contractor's equipment. The structure is 1,400 feet long and about 12 feet deep, cutting across the entire lower field and draining into the Chenango River. Crumb now has full use of those 10 acres.

Other Chenango County farmers are benefitting from like projects. Frank Zuber has just reclaimed 20 acres of good cropland by constructing a 1,000-foot ditch. It completely takes care of the water that had been washing down the hillside and destroying crops on 20 acres of flat land. John Proshine has just completed a 2,900-foot ditch which drains 30 acres that had been too wet to grow anything. He'll use it as a grazing area for his dairy herd.

**CLASSMATES HELPED.**—Douglas Drummond, vo-ag student at Central High School, Hopewell Township, Mercer County, N. J., was troubled over two gullies that made a part of his father's farm unworkable. He had the idea that soil and water conservation practices highlighted in his class work could be used to end the waste in his dad's land. Fellow students volunteered to help. Sven A. Gilberg, vo-ag teacher, and G. Sterling Otis, work unit conservationist, offered to supervise the job. With their guidance, about 20 boys built diversion terraces and reclaimed the area for crops.

**SMITH SYSTEM SUCCEEDS.**—When good soil conservation practices, including rotation and fertilizing programs, are followed, dairy farming can succeed on light sandy soil, Robert L. Smith and his son Leon, dairy farmers at Milford, N. H., have learned. They are in the Hillsboro Soil Conservation Sub-District.

On a farm made up entirely of Merrimack fine sandy loam they are raising feed for a 15-cow herd. Ease with which it can be tilled more than offsets the extra cost of operations needed to keep it at peak production.

They started with a complete conservation farm plan. It listed all needed rotations, mixtures, and fertilizers. Rotation starts with 1 or 2 years of corn followed each year by a cover crop which is plowed under in the spring. This is followed by 3 years of hay before the acreage is returned to cropland.

The fertilization program consists of a liberal use of cow manure reinforced with superphosphate at seeding and for annual top dressing. Hay pasture land receives an additional top dressing of commercial fertilizer, one-half ton per acre in the spring, and one-half ton in the

fall. In fertilizer the 5-10-10 formula gives the Smiths best results for corn and hay production.

By using these practices they are cutting at least 4 tons of good mixed alfalfa hay per acre annually and their corn land is producing up to 15 tons of silage per acre. In rotational grazing, some lands furnish both pasturage and hay.

In the past 4 years the Smiths have cleared 8 acres of flat and light land that had been covered with pine. In clearing 2 acres per year they salvage the wood and lumber, bog-harrow or plow the area, and seed it to a cover of winter rye (100 pounds per acre). This is plowed under in the spring and followed by a green manure crop which is plowed under in late summer. This is followed by another crop of winter rye, plowed under the next spring. The tract is then seeded with a mixture of alsike clover, timothy, or redtop and alfalfa.

## UPPER MISSISSIPPI



**HIRED MAN SAYS GOOD-BYE.**—When Herman Meisner took over the 160-acre J. W. Black farm near Verna, Ill., in 1942, a full-time hired man was needed to help operate the farm and an adjoining 80 acres. At that time there were about 210 acres in row crops.

Since then Meisner and the owner, with the help of SCS technicians assisting the Marshall-Putnam Soil Conservation District, have developed a complete farm conservation plan for the 160. Included are a 5-year rotation of 2 years of corn, a year of oats, and 2 years of alfalfa and brome grass; contour field divisions, and contour farming. Meisner is now changing the rotation on the other 80 to include more legumes.

Now he farms with only a small amount of seasonal labor. Meisner's experience is typical of many mid-western farmers who have found that conservation farming enables them to cut down on labor.

**HELPLESSNESS GETS TO BE HABIT.**—Hillsboro, Ill., had need of a new athletic field and gridiron but, as is so often true in such community efforts, available funds were somewhat limited. The most pressing need was for a competent engineer to lay out the field.

Martin T. Ekovich was an engineer with the Soil Conservation Service before becoming a district conservationist about 6 years ago. Hearing of the situation, Ekovich came forward and volunteered. Working in his spare moments, evenings and Saturdays, he did the engineering which transformed a rough, timbered area into a first-class athletic field.

When all engineering and grading had been established, Ekovich helped his Hillsboro neighbors develop a fine sod of alta fescue. His instructions on this included good soil treatment, heavy seeding, light straw mulch, and watering. The results were excellent.

When the new athletic field and gridiron were dedicated, Ekovich was surprised to hear his named called from the speaker's stand. His Hillsboro neighbors presented him with a fine wrist watch in recognition of his contribution to community progress.

—W. S. SPEER.





**SOIL HAS DAY IN COURT.**—Last fall, in a lawsuit at Carroll, Iowa, a landowner sued a tenant for plowing up hayland and planting it to corn in defiance of a lease. Permanent damage to the land was established during the suit, because of erosion and failure to follow the established crop rotation. Damages totaling \$500 were allowed by the jury. E. A. Raun, the attorney who prosecuted the case, is himself a farmer cooperator with the Crawford County Soil Conservation District.

**HOOSIERS ORGANIZE.**—The Northeastern Indiana Association of Soil Conservation District Boards of Supervisors was organized in Kendallville in November. This is the first area association of Boards of Supervisors in Indiana.

The Association consists of the district supervisors from Noble, Allen, DeKalb, and Elkhart County districts.

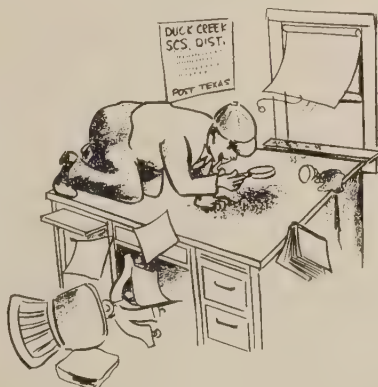
Officers are Carlos Palmer, chairman, Noble district; Russell Housel, vice-chairman, DeKalb district; Glen Bowman, secretary, Elkhart district; and Carl Dickes, treasurer, Allen district.

The association plans to meet quarterly and will work on projects that are too big for a single district to handle, such as the staging of a farm face-lifting demonstration where a farm is rebuilt in 1 day, the holding of grassland field days, and other programs of area-wide interest.

The association hopes to enlist the cooperation of chamber of commerce, businessmen, farm organizations, implement dealers, seed and fertilizer companies, the Extension Service, and other groups and agencies in fostering various area programs.

—O. E. ACKERSON.

## WESTERN GULF



**GOOD SOIL GONE WRONG.**—The FBI doesn't have a monopoly on sleuthing these days, at least in the Duck Creek Soil Conservation District, Garza County, Tex. A recent bit of detective work by A. P. Ottinger, work unit conservationist at Post, Tex., shows that dust storm soil has just as many fingerprints and identification marks as the Nation's No. 1 criminal.

Following a dust storm that came in from the High Plains, Ottinger took a sample of dirt from his desk and window sill. The brown color of the soil showed that it did not originate from the rolling Red Plains but came from the dark, hardland High Plains west of

Post. Furthermore, Ottinger found that High Plains farmers lost a greater percentage of organic matter and mineral elements than they did other soil particles.

An analysis made in the regional soil-plant-water laboratory at Fort Worth showed that the samples contained 74 percent more organic matter than the average hardland High Plains topsoil. (Organic matter not only adds plant food to the soil, but governs the intake of water and air and resistance against wind erosion.)

Likewise, an analysis of the mineral content of the blown soil showed it to have 33 percent more nitrogen, twice as much phosphorus, 150 percent more potassium, and three times as much calcium as are found in the average High Plains topsoil.

So when dust storm soil sifts through a window, eye it seriously. It's made up of those things that are needed for food production. They are no good unless they are kept on the farm.

**TEXAS TRANSFORMATION.**—The Ned Shurette farm—fairly typical of central Texas—underwent a dawn-to-dusk transformation last November. Prime mover in organizing the McLennan County spectacle, which attracted an audience estimated at 20,000 to 30,000, was the Waco Chamber of Commerce, working in cooperation with various agricultural agencies.

Visitors from throughout Texas and from several surrounding States were highly impressed with the miracle wrought and with the hundreds of men and the nearly 100 machines responsible for the achievement.

Conservative estimates put at more than \$10,000 the value added to the farm in the 1 day. The project was so extensive that it was impossible to make accurate records of service, materials, seed, fertilizer, shrubbery, machinery, and other donated supplies.

Terraces were installed, fields cultivated, cover crops planted, brush cleared, pastures seeded, shrubbery and orchard planted, the farm pond enlarged, a new farm road constructed, poultry house and brooder house constructed and painted, waterways built and sodded, and other improvements made.

Press, radio, magazines, newsreels, and a television station recorded the activities.

As a finishing touch, the Shurette's home was remodeled. Included were new bathroom with complete new fixtures, an electric pump to bring water to the kitchen and bathroom, and insulation for the entire house.

It was a big day for 31-year-old Ned Shurette, his wife Juanita, their two children, Paul, 11, and Cheryl, 4, and Ned's mother, Mrs. C. P. Shurette.

Ned's farm was chosen because just about every known type of soil conservation practice could be installed on the land which, last year as a tenant farmer, Ned began buying under the tenant purchase plan of the Farm Home Administration.

Ned has promised to maintain the improvements. "And that's the real 'payoff' for the operation," soil conservators say. "It is our hope that the farm will be studied in years to come when comparisons can be made of the increased productivity made possible by good soil conservation practices."

—PAUL D. MARABLE, Jr.

## PACIFIC

**WATCH CODECKE GO!**—Edward Godecke of Gardnerville, Nev., a supervisor of the Carson Valley Soil Conservation District, wanted to reclaim 12 acres of waste land. In Nevada irrigation is necessary, and land leveling is the first step.

SCS engineers surveyed the field and figured the yardage to be moved. The cost would be high. But the field is at the entrance to his ranch and Godecke figured the improvement in looks alone would be worth considerable. He went ahead with the job.



His first crop averaged 2,500 pounds of oats per acre, enough to pay a third of the cost of leveling. Furthermore, at the national average of 2½ acres per person, Godecke estimates that he can feed five more people.

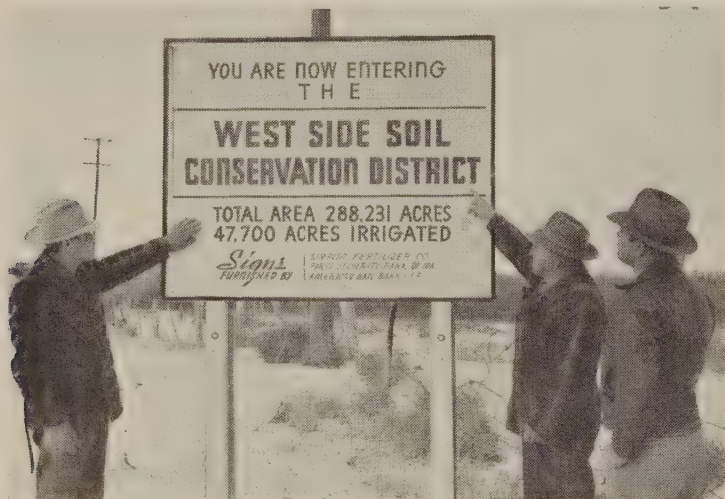
This is but a part of what he has done toward conservation. Last fall he leveled another 17 acres, at much lower cost, and drained 23 acres of tule swampland preparatory to leveling. Technicians have now staked 22 acres of sagebrush land for leveling and 13 acres of an old alfalfa field for improved irrigation. Godecke is going to deepen and extend his drain to take in some additional acreage of tule swampland.

—H. B. SHAW.

**SIGNS OF THE TIMES.**—Night or day, motorists in eastern Idaho know when they enter the boundaries of the West Side Soil Conservation District. Large signs, with the name of the district in "scotchligh" which reflects car headlights at night, have been erected by the Board of Supervisors at strategic boundary points where four main highways enter the district.

The idea for the night-and-day signs, according to V. P. McConnell, soil conservationist working with the district, "came up one night at a recent supervisors meeting." Lowell C. Moore, secretary-treasurer of the board, suggested they talk over financing the signs with local merchants. He soon reported that one of the local fertilizer companies would pay for the construction of the signs provided other merchants would cover the cost of lettering and installation. E. C. Johnson, chairman of the board, said that was all taken care of; two local banks had agreed to advance \$35 each for the painting and lettering.

Not to be outdone, the supervisors decided to finish the job themselves. They furnished posts and bolts and took a day off to put them up along the highway.



## NORTHERN GREAT PLAINS

**CHECKS IN FOR WORK.**—Restoration of a 35-acre field to production is one result of the major overhaul being given his irrigation system as part of his farm conservation plan, according to Joel Bingham, who operates an 856-acre ranch near Thermopolis, Wyo., and cooperates with the Hot Springs Soil Conservation District.

**GULLIES GONE.**—Smooth slopes instead of gullied ones, and a doubling of corn yields, have spurred E. H. Call to hustle along on his conservation program. Call farms 200 acres near Girard, Kans., and is a cooperator with the Crawford County Soil Conservation District.

**BANKERS BACK "BONUS".**—One hundred subscriptions to SOIL CONSERVATION Magazine have been ordered by the Kingsbury (S. Dak.) Soil Conservation District. Harold C. Fritz, chairman of the Board of Supervisors, writes as follows:

"We have just completed the first year of operation of our district and as a means of maintaining high interest, keeping our growing list of co-operators posted to date on the national soil conservation problem, and as a means of expressing our thanks to co-operators for their very good cooperation during the past year, we plan on sending them a year's subscription of SOIL CONSERVATION as a sort of bonus for their part in promoting soil conservation on the land.

"The cost of the 'bonus' is being carried by the bankers within the district, all of whom have contributed and all of whom are very interested in promoting soil conservation.

"Copies of SOIL CONSERVATION will also be furnished the high schools within the district as well as the bankers and a few other individuals."

One field in particular was badly cut up by gullies. Most of the gullies were small but some were getting too big to cross with farm machinery.

"This land was limed in 1945 and had received manure rather regularly," Call said, "but still the yield averaged only about 18 bushels per acre. Erosion took the fertilizer, along with the soil, so I didn't get much benefit from it. And crop washouts did quite a bit of damage."

The gullies were plowed in. The field is now terraced and contour farmed. Even in a wet year there is no erosion now and much of the moisture is conserved.

**CHOSEN BY COWS THEMSELVES.**—Of all the grasses seeded in a demonstration plot that he now owns, the cattle showed a preference for intermediate wheatgrass for spring grazing, according to Elmer Nelson, a co-operator with the New Helena Soil Conservation District. Elmer farms with his father, Chris, 11 miles east of Broken Bow, Nebr.

The grasses had been seeded by the district supervisors in 1944 to give farmers in that area a look-see at the newer grass developments. The demonstration plots are in a field where there is a good stand of native grasses. Besides intermediate, there are plots of brome grass crested wheatgrass, western wheatgrass, and a number of warm-season or summer grasses.

"I put the livestock on that field early in the spring," Nelson says. "The cattle took the intermediate wheatgrass first and stayed on the plot as long as they could. After a couple of months, I took the stock out of this pasture, fenced the intermediate wheatgrass, and got a fair seed crop."

This seed was used to start the seeding program to retire land not suitable for cultivation, as part of his farm conservation plan. Intermediate wheatgrass is considered about the best erosion-control plant in that part of the State.

**DECADE OF CONTOURS.**—Dennis Danielson, near Alcester, S. Dak., farmed on the contour 20 years ago. That was when he lived near Fort Randall. He did it to make things easier for the horses. He didn't realize then that it also saved soil and moisture.

Now Danielson is contour farming again, this time near Alcester. It is part of a conservation plan developed in cooperation with the Sioux-Brule Soil Conservation District.

He also uses a rotation which includes sweetclover, and has made grassed waterways out of gullies. The gullies were first bladed into the desired shape and then seeded to brome grass.



"My yields used to average about 30 bushels per acre for both oats and corn," says Danielson. "My oats yields now run around 50 bushels and corn 55 bushels."

Danielson likes to point to the brome grass in his fence rows. Seeding it was a weed-control measure.

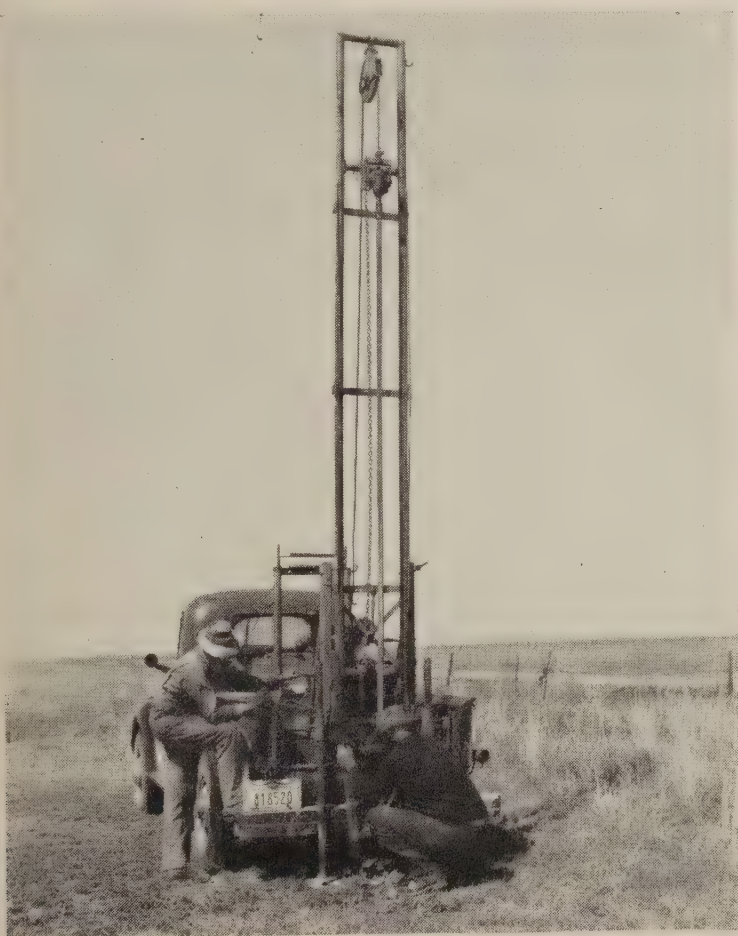
"The brome grass sure has choked out the weeds in the fence rows," he explained, "and that saves me a lot of work. I used to have to spend a lot of time trying to control the weeds there."

Besides seeding it in waterways and fence rows, Danielson also has brome grass in a 26-acre pasture. There it is in with bluegrass. He pastures 50 head of cattle there during the grazing season.

The grazing land is divided into three pastures so that rotation grazing can be practiced. This system keeps stock off the grass during its recovery from grazing and has much to do with the heavy carrying capacity.

**LAZY LAND BROUGHT TO LIFE.**—Drainage has made 50 acres of former waste land usable, has brought an end to seepage of water into the farmhouse basement, and has transferred the troublesome water to a part of the farm where it is needed, it is reported by H. R. Costain, owner, and LeRoy Atz, operator, of a 480-acre farm south of Huron, S. Dak. The farm conservation plan is being developed in cooperation with the West Beadle Soil Conservation District.

## SOUTHWEST



**First experimental power auger cost about \$1,000. The Prowers District believes the cost can be lowered on future rigs.**

**DISTRICT BUILDS POWER AUGER.**—Necessity was truly the mother of invention for the Prowers Soil Conservation District of southeastern Colorado.

One of its big problems is the high water table. The district's drainage program was being slowed down because it took so much time to make the necessary drainage investigations.

The supervisors decided that one way to speed things up would be to build a portable power soil auger. The supervisors, SCS technicians Dwight Waters and Orville Parsons, collaborated with a blacksmith in Lamar, and the power auger was built.

Materials were scarce, and many of the parts had to be fabricated in the blacksmith shop. They used auto and tractor parts and had difficulty getting a bit that would function properly.

Finally they produced an auger which can drill a 10-foot hole in 4 to 10 minutes, depending on the soil. The district operates the rig and farmers pay 25 to 50 cents per acre for the service, depending on the size of the area investigated.

The information obtained from borings, plus the soil conservation survey, affords technicians the data they need to plan an effective drainage system that will bring the land back into high production.

The district is still working to improve the auger—it has some shortcomings. But it saves a lot of time and back-breaking hand labor and is speeding up the program in the Prowers district.

—E. MILTON PAYNE.

**LEARN ABOUT LAND.**—Soil conservation in Millard and Beaver Counties, Utah, is "going to school" for all practical purposes.

For the last 5 years the Soil Conservation Service has cooperated with public schools in educational work to acquaint teachers and pupils with soil and water conservation practices. For 2 years teachers have taken annual trips to soil conservation districts as a part of the regular teachers' institute.

This year, along with regular aid to classes and teachers, the SCS compiled a list of the best available bulletins on soil and water conservation.

Each school, public library, veterans' group, and vocational department now is being provided with a complete set of selected publications.

**WATER WORRIES RECEDE.**—A problem which has confronted users of Mona, Utah, since the pioneers of 52 years ago first tried to bring water from the high Mt. Nebo slopes, now seems close to solution.

The East Juab Soil Conservation District, with SCS technical help, are working on a water project estimated to cost more than \$8,000.

Already, water users have constructed 550 linear feet of concrete canal which will bring water down the steep wall of Willow Creek Canyon at the rate of 5,000 gallons a minute. This is expected to eliminate an annual maintenance outlay of more than \$500. A diversion dam, sand traps, and flushing systems are being installed.

**LAMB CROP IMPROVES.**—Cornelio A. Cisneros of Cerro, N. Mex., attributed his 110-percent lamb crop this year to the soil and water conservation program he is carrying out.

Cisneros runs around 200 head of ewes on his 320-acre farm, of which 150 acres are in cultivation. The ewes are kept on the farm and fed well during the winter and grazed in the National Forest during the summer.

This year Cisneros had a 110-percent lamb crop which averaged 84 pounds and brought 24 cents a pound in Denver. One-fourth of the lambs averaged 96½ pounds and went directly to the packers. The wool clip averaged 8 pounds each.

In the past, Cisneros and his brother maintained 1,200 sheep and grazed them on the sagebrush range during the winter instead of feeding them on the farm. While this practice was followed there was a 70-percent lamb



## FOR WHOM THE BELL TOLLS—1649 STYLE

*No man is an Island, entire of himself.  
Every man is a piece of the Continent, a part  
of the Maine.  
If a clod be washed away by the Sea, Europe  
is the lesser, as well as if a promintory  
were; as well as if a Mannor of thy friend's  
or thine own were.  
Any man's death diminishes me because I  
am involved in Mankind.  
And therefore: never send to know for whom  
the bell tolls.  
It tolls for thee.*

JOHN DOANE—1600.

crop, lambs were sold at 55 pounds, and the wool clip was only 6 pounds each.

Cisneros, cooperating with the Taos Soil Conservation District, figures that his farm flock of 200 ewes gives him better returns on capital and labor than did the 1,200 previously maintained. His explanation: During the winter the sheep are kept on the farm where crop residues, hay, and other feed keep them in good condition. Breeding ewes are kept in better condition and produce higher quality lambs. Better use in summer of National Forest range results when ewes and lambs go on the range in good condition. The summer forage brings rapid growth of the lambs.

Cisneros has 30 acres in crested wheatgrass for pasture in early spring and late fall. This grass, which begins growth early in the spring, supplies green forage during the lambing season. He plans to seed additional acreage of cultivated and sagebrush land to crested wheatgrass pastures next year. Other conservation practices being carried on by Cisneros include land leveling and irrigation system improvements for more effective use of water, increased production, labor savings, and prevention of erosion.

**COTTON PRODUCTION UP.**—Increased cotton production from 5 acres that were leveled in 1947 has paid double for the cost of the work in a single year, according to Ernest P. Malone, Jr., farmer in the Cottonwood community northwest of Artesia, N. Mex.

Malone reports that he and his brother, Cooper, leveled the 5 acres in the spring of 1947, using his own tractor and a grader which he obtained through the Central Valley Soil Conservation District. SCS engineers helped lay out the field in benches 56 feet wide. Total cost was \$30 per acre.

This year Malone harvested seven bales of cotton from the field. He says that the yield would not have been more than two bales if the field had not been leveled. He figures the increase equal to more than twice the cost of leveling.

Land lying southwest of this field was more level and Malone thought that it was being perfectly irrigated. However, this land produced less this year than that which was leveled. Malone now believes that this smaller yield resulted from water running off the slight slopes of the land which he considered level.

**WATER-PROOFING DITCHES.**—There is widespread interest in Pinal County, Ariz., in lining irrigation ditches with concrete to prevent loss of water.

Recent studies by SCS technicians on two Pinal County farms showed that 20 percent of the water was lost after it had run one-half mile in an open ditch. On a third farm, 18 percent of the water was lost after 1 mile.

Does it pay to line ditches? In answer, let us assume that an operator is farming 300 acres with 1 mile of ditch, using 3½ acre-feet per acre per year, or 1,050 acre-feet. A 20-percent loss amounts to 210 acre-feet. If it costs \$4 per acre-foot to pump the water, there is a direct annual loss of \$840. This loss over a period of years would go far toward paying the cost of ditch lining, there would be more water available for crops, and there would be other savings.

**RETURN OF THE NATIVE.**—Sand lovegrass, hardy western native which disappeared from northeastern Colorado years ago, is being brought back in an effort to reclaim thousands of acres of barren, sandy land. This long-stemmed, high-protein grass thrives in soil where other grasses cannot exist.

Willard Hart, cooperater with the South Platte and Haxtun Soil Conservation Districts, planted 15 acres to sand lovegrass in May 1947. In the fall of 1948 he cut 3,000 bundles for threshing to recover seed. Each bundle weighed about 7 pounds.

The grass, he says, serves a twofold purpose. It is good feed and it helps nail down the topsoil. It yields hay in volume up to three-quarters of that of alfalfa, but seed is expensive, selling at \$4 to \$6 a pound.

About a pound of seed is required for 1 acre, and yields average upward from one-half ton of hay for each acre planted.

**TWO FARMS WHERE NONE GREW BEFORE.**—Approximately 350 acres, or the equivalent of two average farms, have been brought into profitable production under soil conservation practices since the La Plata Soil Conservation District in southwest Colorado was organized in July 1947.

This newly cleared acreage has been seeded to wheat, alfalfa, beans, and pasture, and the first crops usually have paid the cost of bringing the land into production. Only suitable land is being put into cultivation and crops from these acres are adding around \$20,000 annually to the income of district cooperators.

Chester Beaston, first cooperater of the district, has cleared 12 acres of timber land and expects the initial crop to pay the cost. Beaston also has united and leveled two fields on his 320-acre farm at a cost of \$10 to \$12 an acre and is confident that the work will pay for itself with the next crop.

## FOR WHOM THE BELL TOLLS—1949 STYLE

*No farm is an Island entire of itself.  
Every farm is a piece of the Valley, a part  
of the Community.  
If an acre be eroded away by rains or winds,  
the Valley is the lesser, as well as if a farm  
or ranch of thy friend's or of thine own  
were.  
The death of any acre of land diminishes me  
because I am involved in Agriculture.  
And therefore: never send to know for whom  
the bell tolls.  
It tolls for thee.*

BILL DONNAN—1949.





*April 1949*

# ≡ SOIL CONSERVATION ≡

**OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE**

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.



# SOIL CONSERVATION.

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CHIEF, SOILS CONSERVATION SERVICE

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### WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

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**FISH PONDS AID HOSPITAL.**—Because farm ponds and fishing are mighty popular in Aroostook County, Maine, seven persons will enjoy a fling at their favorite pastime some time this spring and summer, and a local hospital is collecting \$885 for their sport.

It all happened this way:

Last fall the Presque Isle Rotary Club held a radio auction to raise funds for the hospital. Merchandise was donated by merchants and farmers.

Horace Higgins, cooperator of the Central Aroostook Soil Conservation District, thought that a little fishing in his farm pond might bring in some of the needed cash. And so he donated the privilege of catching 25 speckled trout from his farm fish pond. The prize was broken up into lots of five each, the successful bidders to catch these fish next June.

The first lot sold for \$25 and the second for \$30. The next night one lot was sold for \$50. The third night, the fourth and fifth lots were auctioned off for \$60.50 and \$60, making a total of \$225.50 for the privilege of catching 25 fish from Horace Higgins' pond.

Not to be outdone, Dennis Getchell, chairman of the board of supervisors for the Central Aroostook District, donated a week end of Atlantic salmon fishing for two in his private pool on the Tobic River—with guide, canoe, fishing tackle, and meals furnished. The competition for this prize was very spirited and it was finally taken for \$660.

—FRANK C. EDMISTER.

**FRONT COVER.** — The photographer's camera found Mrs. Earl G. Curtis at work



in her contoured garden at Mansfield, Vt. It takes a good garden to keep the Curtis family, including one boy and five girls, in vegetables all summer. Note the miniature terrace running through the center of the garden. Mr. Curtis

is work unit conservationist at Montpelier.  
(Photo by the late A. F. Hallowell)

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# SOIL CONSERVATION

## Puts CASH in the Treasury

**F**ARMERS in soil conservation districts who have carried out conservation plans developed with assistance from technicians of the Soil Conservation Service increased their incomes in 1948 by approximately 245 million dollars, it is estimated on the basis of reports from cooperating farmers and ranchers.

This increased revenue would yield Uncle Sam nearly 70 million dollars on the basis of present income tax laws. It works out something like this: By 1948, 344,827 farms averaging 290 acres in size had been treated. These conservation-treated farms, on the average, earned enough additional income as a result of following conservation methods that they paid an estimated \$103 more income tax each than similar farms that had not been treated.

Applied to the 344,827 farms, this \$103 per farm would yield \$35,517,181 in additional tax revenue due to the use of soil conservation measures. This tax is paid directly by farmers, but their increased income provides at the same time other sources of revenue, such as increased retail trade and an additional volume of products handled by wholesalers, processors, and distributors, most of whom pay income taxes.

Deducting \$35,517,181 from the 245 million dollars of increased income farmers would have left \$209,482,819 of extra income to spend. If we assume that only half this amount, or \$104,741,409, went into retail trade channels, it would yield

\$15,187,504 in the 14½ percent income tax bracket.

If only half of the 245 million dollars of additional business created by the sale of this amount of farm produce yields income tax by wholesalers, processors, and distributors, the taxes paid by such businessmen would return an additional \$18,487,500.

Thus, the extra income taxes paid by farmers as the result of their soil conservation work and by retailers, processors, and distributors who profit by the extra business would total \$69,192,185. It appears, therefore, that in 1948 the Federal Government recovered in increased income tax the entire amount spent by the Soil Conservation Service (a total of \$39,189,654) in supplying technical assistance to farmers through their soil conservation districts, and made 76 percent profit on its investment.

Precise information regarding income taxes paid by farmers is not available, since the Internal Revenue Bureau does not separate farmers' tax returns from those made by other individuals. These estimates, based on 1948 income tax schedules, have been checked carefully, however, with economists specializing in income tax matters and are considered to be very conservative.

These figures include only the extra income for the Federal Treasury through personal income tax. No effort has been made to calculate the additional Federal excise tax, State income tax, or State sales tax. It is certain these sources of revenue have also been increased significantly, due to the new wealth created by farmers and ranchers who have practiced conservation on their land.

NOTE.—The author is assistant chief of operations, Soil Conservation Service, Washington, D. C.



And the best of it is that increased revenues will continue to be produced, year after year, so long as farmers effectively maintain their conservation programs and apply the appropriate combinations of treatment to still more acres that need such care.

There are, however, many other aspects to this story besides putting cash into the Treasury. Many farmers report gratefully on the security and satisfaction they and their families now enjoy. They tell of being able to pay off the mortgage, improve the farm and the home, educate the children, buy new equipment, establish a comfortable savings account—all because their yields

## DISTRICT PROFILE

LLOYD  
ARBUCKLE  
—  
HOOSIER

Lloyd Arbuckle was raised on a farm in Scott County, Ind. Perhaps his early days of imbibing pure mountain air (not dew) with a gun on his arm and a bird dog at his side, are responsible for his growth into a lean, strong 6 feet. At any rate, Lloyd is a conservationist at heart. He loves the out-of-doors. He enjoys hunting, and he is a perennial judge at Indiana and neighboring State bird-dog field trials. He lives in a flat farming area which is an easy prey to wind erosion, bad drainage, and poor land use. Lloyd didn't like to see this progressive destruction, so he's now added a love of soil to his long list of related conservation efforts.

After graduating from a teachers college at Terre Haute he taught school in his home county and settled down as a married man. In 1930 he moved across State from the limestone hills of southeastern Indiana to the prairie and sand plains of Newton County in the northwestern section. At Lake Village he was grade school principal.

But Lloyd was also a businessman and his commercial ventures assumed growing importance to him and his young family—Mrs. Arbuckle, 14-year-old Katheryn, and 10-year-old Bill. So he switched from education to managing his farm on the outskirts of Lake Village and handling other business ventures.

increased and profits went up when they started farming the conservation way. You can't beat conservation farming as a way of life, as a way of achieving security, as a way of improving living standards, as a way of enjoying better community service facilities, as a way of making our Nation permanently strong and secure.

With a National debt of 252 billion dollars, it behooves everyone to encourage and practice economy in government. Under present circumstances, the activity of the Federal Government in the field of technical assistance to soil conservation districts looks like sound business, for it helps reduce the National debt instead of adding to it.

Lloyd's farm is on a sand pocket in the old lake bed and he is proud of how he has developed it from a waste area to one where today may be seen fine registered Durocs, luxuriant alfalfa, 4 acres of irrigated peonies and gladiolas—for the Chicago flower trade—and his particular pride, a 10-acre Pitman-Robertson wildlife preserve. The latter has been developed along a ditch that runs through his place. But he has also found time to operate a bulk plant and a fleet of trucks for an oil company and operate several retail agencies on the side.

He is an active civic leader in the village. He is a leader in the local Grange, the Izaak Walton League, the Conservation Club, and trustee of the Presbyterian Church. He is also a local representative of the State Park Committee, and has helped select a site and acquire land for the Kankakee State Park now being built in his county in an effort to put to good land use some of the poor soils areas lying along the Kankakee River.

But it is his work as an organizer and supervisor of the Newton County Soil Conservation District that takes up most of his time. Lloyd is back in his old teaching role as a supervisor—educating neighbors in soil conservation. But he blends his business talents with education and gets things done.

Lloyd has served since district organization as secretary-treasurer. More important still, he is the equipment manager for the district. This is a big job because the district early recognized the need for drainage of the better flat prairie lands before much progress could be made on less productive lands. So the district borrowed a dragline and bulldozer from SCS and went to work.





Lloyd Arbuckle.

Now most of the good land is in production and the poorer land is getting its share of conservation attention. Alfalfa, previously a rarity, is now common, and through use of soil-building and protective practices the land is being held in place and its productivity increased. The necessary drainage ditches are demonstrations of good construction, and supporting farm practices protect the ditches from impairment. At one time Lloyd supervised the operation of a total of five draglines and several bulldozers in the district and saw that the job was cleaned up quickly.

These construction operations gave farmers a chance to renovate the legal and farm ditches for half the price possible before the supervisors took hold and, better still, often got the jobs done within a few weeks of the decision to go ahead.

These operations built up some spare funds which have been used for educational purposes, such as banquets, meetings, and essay contests, and for purchase by the district of equipment, such as the new tile-laying machine now operating in the extensive prairie soil area.

The equipment was serviced, routed, and kept in repair by Lloyd. This, together with contracts, collections, and bookkeeping was a task in itself. But he still found time to organize the Indiana Association of Soil Conservation District Supervisors in 1943, an organization which he heads as president. He is a member of the board of di-

ectors of the National Association of Soil Conservation District Supervisors, and at one time he chartered a plane to get to one of their western meetings. He also serves as the district supervisor representative on the State Soil Conservation Committee by appointment of the Governor. For 2 years he has been a judge on the "Save Hoosier Soil" essay contest sponsored by the *Indianapolis News*.

—KENNETH WELTON.

**IRRIGATED PASTURE—MORE MEAT.**—A 3-acre experimental irrigated pasture netted W. W. "Lub" Martin near House, N. Mex., a profit of \$675 the first year through the feeding of livestock, and hay production.

As a demonstration, Martin planted the pasture early in the fall of 1946 in cooperation with the Southwest Quay Soil Conservation District, the Soil Conservation Service, and County Extension Agent C. A. Grimes. Several different grass seed mixtures were furnished by the SCS regional nursery in Albuquerque. For comparison under actual grazing conditions, each mixture was seeded in a separate plot.

Martin did an exceptionally fine job of handling the pasture, according to Wayne H. Miles, SCS representative assisting the district.

"Martin did a good job of getting the pasture started by preparing an excellent seedbed on a level field," Miles points out. "Watering after seeding in September gave the plants a good growing start."

When the grasses and legumes began to make good growth early in 1947, Martin had only one milk cow. She couldn't eat fast enough to keep up with the growth, so by June the cow was almost hidden by the grasses and clovers. Martin then cut the pasture for hay and got 221 bales, or an average of 2.2 tons per acre.

Heavy grass growth continued, so Martin decided that he would have to add more livestock. Fifteen calves weighing about 175 pounds each were put on the pasture around July 1, along with the original milk cow and six hogs. The pasture grass production still was too much for the grazing livestock, so in mid-August Martin added 15 old ewes averaging 70 pounds in weight.

When the livestock was removed from the pasture after a killing frost in the fall, the ewes weighed an average of 120 pounds, a net gain of 50 pounds each—a total increase of 750 pounds of mutton. The 15 calves averaged 400 pounds. This was a gain of 225 pounds each, or a 3,375-pound increase in beef production. This means that Martin's pasture produced more than 4,000 pounds of meat, or more than 1,333 pounds per acre. In addition, grazing had been provided for the milk cow and the hogs.

Seven of the ewes got into a hog feeder and died after eating too much grain, so not all of the mutton was marketed. However, Martin points out that the pasture produced the meat even though he didn't get to sell it.

He figures that he broke even on the sheep, even after losing nearly half of them, and that the 3,375 pounds of beef produced on the pasture was worth \$675, or \$225 per acre.







Mr. and Mrs. Strong and their children.

**H**OWARD B. STRONG, JR., 28-year-old war veteran now has the laugh on some of his Cheapeake Bay neighbors, near Cecilton on Maryland's Eastern Shore. It's a big hearty laugh because only a bit more than a year ago they were poking a heap of fun at Howard and making a lot of wisecracks about his farming methods.

Back then, when he was all alone and had no farming experience, he had just taken over an old family farm consisting of 212 acres of sassafras loam. When he promptly tore out the old Osage-orange hedgerows dividing five square fields and contour plowed the entire area, they said it looked like the work of a drunkard. And when he sowed clover seed on top of snow, they peered into almanacs and said his time and his seed were wasted because the sign was not right.

Howard has the best laugh. He was declared "Maryland's Champion Conservation Farmer for 1948" as State winner of the Baltimore and Ohio Railroad's annual competition. This was followed by his selection as conservation champion of all contesting areas flanking the rail lines from New York to Illinois. Young Strong was the unanimous choice of a committee composed of Hugh Bennett, chief of the Soil Conservation Service; Wendell R. Tascher, Extension-SCS conservationist; and O. K. Quivey, the railroad's manager of agricultural development.

# Strong 1948 CHAMP PICKED AS

This young farmer topped an outstanding field of finalists in the Baltimore and Ohio System-wide contest. This field narrowed down to T. J. Shambaugh, Jr., Macon County, Ill.; William Boesing, Clark County, Ind.; James E. Johnson, Fairfield County, Ohio; Albert Brichner, Berkeley County, W. Va.; W. Bird Yeany, Clarion County, Pa.; Archie Foster, Allegany County, N. Y.; and Strong himself.

Strong's farming progress started back in the fox holes of the Anzio beachhead where he did a heap of thinking about what he was going to do if he ever got home. He figured there were plenty of opportunities if he could take a fling on a family-owned farm. "Don't sell it!" he wrote "Mom."

Back at last, he worked 2 months at his old job with a Seaford, Del., chemical company before starting a 2-year GI training course in agriculture at Chestertown, Md. In the fall of 1946, immediately after he had taken over the old farm from a tenant, Strong contracted with the Cecil County Soil Conservation District for a complete farm conservation plan for his 212 acres, and immediately started to develop it. He had a lot of determination to make good, an investment of several thousand dollars in tools and equipment, the encouragement of the soil conservation district supervisors, and the help of SCS technicians.

In return for technical help and a supply of trees and shrubs from the district, Strong agreed to install conservation practices at his own expense. Since then he has wiped out the old crop rotation system, rooted out the Osage-orange hedgerows and built wire fences, planted 5,000



seedling trees and 4,000 shrubs, contoured and strip cropped many of his acres, seeded exhausted tracts for hay, retired 30 acres to pasture which has been terraced to hold water on the slopes and slow runoff, and seeded with Kentucky bluegrass and orchard grass and white Dutch clover. He has protected 30 acres of woodland from fire and grazing, removed dead, sick, and crooked trees for fuel, leased 6 acres of woodland to the State for a game preserve, installed drainage and sod waterways, planted lespedeza on two stripped acres that will not be cultivated until fertility has been built up, and planted wildlife borders. He has painted the barn roof and rebuilt the barnyard fences, and before spring comes he will have bought heifers as a start toward a 15-cow dairy herd.

He has 12 acres of wheat, and when spring comes more stripped and contoured acres will be in corn and other crops and in the full swing of a scientific rotation system. In 1950 he will have 22 acres of corn, 50 of wheat or barley, 25 of hay, and 23 of rotation pasture. The balance of 159 tillable acres will be recuperating from past abuses.

In the farm home he has installed such modern conveniences as electric and water services, a gas stove, refrigeration, and a kitchen sink and bathroom. He has fronted the house with a wind-break of young pines and has built a brick terrace. What's more, he is not alone any more. Last June he married Margaret Anne, a war widow with two children.

Things are looking up for Farmer Strong, and he rejoices because he knows that his sandy coastal plain soil will yield 20 percent more hay, wheat,

corn, and pasture in only three more years—perhaps 100 percent more in 10 years. When it rains, he knows his topsoil is not washing into the bay, and that old gullies are not chewing deeper into his slopes. He knows his terraces, his clover, and his lespedeza are refurnishing the earth with plant foods—50 to 60 percent depleted by generations of straight-row farming. He figures that all this costs him no more than the old style farming, and that didn't pay anyway.

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**DIVING FOR FACTS.**—Farm ponds are the subject of co-operative research studies by the University of Massachusetts and the Soil Conservation Service. One study concerns the construction of ponds and the possibilities of raising game fish and providing water supply for livestock, irrigation, and fire protection. The other delves into the economic angles of irrigation with special reference to quality and quantity of crops produced on irrigated soils, and the cost of construction and management. Dale Sieling, Karol J. Kucinski, Thomas J. Andrews, and H. M. Stapleton are doing the work.

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**NITROGEN SPURS CROPS.**—The use of commercial fertilizer had doubled dry-land wheat production for Erb M. Johnson of Tooele County, Utah.

Last spring, Johnson, working in cooperation with the Grantsville Soil Conservation District, decided to carry out an experiment to determine the effect of fertilizer on wheat production.

Alternate strips running the entire length of Johnson's field were fertilized with ammonium sulfate. The fertilizer was applied with an alfalfa seed broadcaster at the rate of 150 pounds per acre. This was done in January when the ground was covered with snow.

The melting snow washed the fertilizer into the ground and helped set up the chemical reaction needed.

When the grain was harvested this fall, records of yields on the treated and untreated areas were kept. These showed that production on the treated areas was double that on the untreated strips.

It is not expected that the application of nitrogen fertilizers will double production each year, but the test does indicate that the dry-land soils of this area need nitrogen.



Howard B. Strong, Jr., and John C. Johnson of SCS get a look at one of the contoured fields.





Trainees meet with State conservationist and staff at East Lansing, Mich., on summer employment. Reading clockwise from exposed table corner: Robert E. Gunderson, Gates J. Leonhardt, E. C. Sackrider, State Conservationist; Robert E. McAlpin, Bernard C. Dopke, S. K. Kamminga, State administrative assistant; Wilbur E. Cook, G. A. Thorpe, assistant State conservationist; Harry F. Cloft, A. J. Sherman, Patrick F. Dougherty, Edwin A. Luhrs, Harold M. Mayer, R. B. Gummerson, and Warren H. Fenkbeiner.

## TRAINING FOR CAREERS

By VERNA C. MOHAGEN

**L**AST SUMMER nearly 100 college men, just completing their sophomore or junior years, started to work as aids to engineers, soil scientists, and soil conservationists for the Soil Conservation Service. This wasn't the usual type of summer employment. These weren't just ordinary jobs to fill up the gap between semesters. These men came to the Service on probationary appointment as trainees, picked from competitive examinations as

the best and brightest prospects for possible lifetime careers in soil conservation.

The trainees are now back in their respective schools—practically all of them highly pleased with their summer's experience and expecting to return, either for another summer's work in 1949, or, if they are graduating this year, as full-fledged professional soil conservationists, soil scientists, or engineers. But let the participants speak for themselves:

From the Indiana State conservationist: "The 15 college trainees employed in districts have now returned to school. Practically all expressed satisfaction with their summer work and would like to become Service employees upon graduation."

From a Michigan administrative assistant: "I am convinced that the program of employing college students during the summer is worth a great deal more than what it is costing the Service.

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NOTE.—The author is chief, division of personnel management, Soil Conservation Service, Washington, D. C. She points out that credit for the successful application of this program in the Upper Mississippi Region belongs to the State conservationists and their staffs; the district conservationists and work unit conservationists; the regional personnel officer, C. E. Swain; the regional training officer, Hugh Baumgardner; executive secretary, Civil Service USDA Board of Examiners at Milwaukee, Clara Roth; the Chicago regional office of the Civil Service Commission; and all participating colleges and universities.



These students are telling others about our program, and I am sure that next summer we will have more applications for this type of employment than we will be able to take care of. This will put us in the position of being able to choose the best qualified students. Also, those students who worked for us this past summer and who do not plan to continue will carry the training which they have received into their particular fields of activity."

From Jim Menn, a Wisconsin trainee: "Actually meeting the farmer, seeing his problems on land usage, and seeing why certain fields did not produce, is something I could never get out of any college course. In this last summer with the Soil Conservation Service I met many farmers in Jackson County—good farmers, poor farmers—and also saw good and bad farms. I feel totally satisfied that the many different problems I was introduced to on soil erosion and general farm practices is something one can't measure in actual value, such as school credits or dollars. For this opportunity in working with these many different problems I feel most indebted to my superiors who trained me and to the Soil Conservation Service for giving me a chance to see and work with the erosion problem."

The students are selected *before* they graduate from college on the theory that a career in soil conservation must be well thought out and planned for in advance. The Service has an opportunity to size up these young men as they work, see how well they respond to training, and find out for certain if they possess the personality and the will to become good conservationists. In addition, the "old hands" in the Soil Conservation Service help the students appraise their chosen curricula and suggest desirable changes for the coming year. The student trainees, on their part, have a chance to size up the Service and make sure they want to become a permanent part of it.

Most of the States in the Upper Mississippi region participated in this experiment last summer. Students were hired in the subprofessional grades SP-3 and SP-5. They were majors in engineering, in agriculture, in soils, in agronomy, in forestry, in conservation, in agricultural education, in biology, in agricultural economics, and in rural sociology. The trainee system works in well with an alternating work-and-study program such as is carried on at Antioch College, and it can be adjusted equally well to the orthodox two-semester system of other colleges and universities.

The men hired last summer learned while they earned. They were trained on the job and off. Each had a training outline, tailored to suit his needs. It included information about the Service philosophy, policy, and organization; the operation of soil conservation districts; and technical subjects such as soils and agronomy, pasture improvement, engineering, forestry, wildlife management, and farm ponds. The training reports were specific, showing training actually given and by whom, the additional training required, and the best appraisal of the Service representative as to the trainee's prospects as a career conservationist.

In Ohio and Wisconsin (and perhaps in other States as well) provision has been made for students to receive credit for summer work with an accredited conservation agency, provided they submit a satisfactory training report at the end of the season.

In one State—Michigan—State Conservationist Sackrider and his staff met with the college trainees who worked in Michigan, and several from other States, after their return to school. The purpose of the meeting was to appraise frankly last summer's work as a prelude to making plans for improving the trainee program in 1949. Many helpful suggestions were received and all urged that similar meetings be held from time to time during the school year.

This coming season, it is hoped that the trainee program can be extended throughout the Service, including research as well as operations. We feel this is no longer an experiment—the system works.

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**THIRTY-PERCENT GAIN.**—In 1945, when V. E. Evans applied to the Duncan Valley Soil Conservation District in Arizona for help with a conservation plan on his newly purchased farm, his irrigation system had only a few broken-down wooden headgates, no turn-outs and the ditches were so poorly located that they wasted 2½ to 3 acres of his 30-acre Greenlee County farm.

The soil survey, land capability map, land use map, and conservation plan guided Evans in planning tillage practices and crop rotation, leveling land, realigning ditches, and installing headgates and turn-outs.

Today, Evans says that his new ditches save him about 35 percent in water and about 30 percent in time. Eighteen acres that are now irrigated on the contour produced 50 bushels of oats to the acre this year with only three irrigations. He can see the response from application of barnyard manure and plowing under of crop residues. And, of course, he's growing crops on more than 2 acres he saved by relocating ditches which wasted so much of his land.



# BEHOLD THE BUSY BEE!

By PHILIP F. ALLAN

**P**LANNED pollination—in which farmers arrange to have enough insects at hand to get the maximum set of seed when crops needing such services are in bloom—is of comparatively recent origin. Beekeepers have been providing bees to orchardists and legume seed growers for several decades. It was the beekeepers who first called attention to the relationship of their industry to preservation of soil resources. B. F. Paddock, in 1937, published an article in *American Bee Journal* in which some mention was made of soil conservation activities. The term “planned pollination” was coined by the author 3 years ago to distinguish the anticipated use of pollinating insects from the hit-or-miss activities of rare wild insects. Planned pollination, however, may include not only the use of domestic honeybees, but also the development of suitable habitats for important wild species. The expression is gaining wide acceptance among farmers, beekeepers, and soil conservationists.

Until recent years the Western Gulf States produced few legume seeds. They still do not meet their own needs, but depend largely upon imports from the Pacific Northwest and Upper Mississippi areas. Soil conservation activities have stimulated interest in a number of conservation plants for use as cover crops, soil improving crops, and hay. Among the more important are alfalfa; the clovers, including alsike, crimson, ladino, red, white strawberry, Hubam and Madrid; the vetches, especially hairy; bird's-foot trefoil; kudzu; and Sunn crotalaria—all of which require insect pollination for seed production.

A few figures serve to show the expansion of the use of legumes, especially for seed production, in the Western Gulf States. In the Texas Blacklands in 1942 fewer than 300 acres of vetch were planted. By 1947, nearly 90,000 acres of land was in vetch—60,000 of which was on the farms of soil conservation district cooperators. The seed harvest from the 1946-47 crop was 3,500,000 pounds. The first Hubam clover was planted in the Black-

lands in 1934. By 1947, the area was yielding 11,000,000 pounds of seed. The rapid growth of seed production of conservation plants is further exemplified by Hubam seed shipments from the Upper Sabine Soil Conservation District: 1945, 1 carload; 1946, 6 carloads; 1947, 30 carloads.

In 1946 the Soil Conservation Service began a systematic program to call to the attention of seed growers in soil conservation districts the usefulness of planned pollination. Prior to that time beekeepers had been working in districts to a certain extent, and of course some seed growers already had their own bees. The planned pollination program, however, received an exceptional welcome and the use of pollinating services was greatly increased the following year. In the vetch area near Rising Star, Tex., 5,000 hives of bees were used for pollination work. In the vicinity of Greenville, Tex., 3,500 colonies were used. This year Albert Stephens of Divine, Tex., moved 800 hives into Denton County in response to a call for pollinating services by the local district. Elsewhere smaller numbers—up to a few hundred—were moved into legume producing localities.

Beekeepers were quick to see the advantages of working with soil conservation districts. Through the district supervisors they are able to obtain information on the number of acres of legumes to be planted. Needs for bees can thus be anticipated. The location of plantings is given to all interested beekeepers so that the strategic placement of stands of hives may be made to assure maximum pollination. In the words of Hugh Shofner, a beekeeper of Greenville and former president of the Texas Beekeepers Association, “Soil conservation work has done more for the beekeeper than any other agricultural program. There was no money to be made from beekeeping in this vicinity until the soil conservation district started its vetch and Hubam clover program.”

Not all farmers in districts are using the bees of professional beekeepers. Many of them are purchasing their own bees. Everett Rogers, district supervisor of the Green County-Crowley Ridge Soil Conservation District, Ark., is among those who find it profitable to provide bees for the ladino clover he grows. W. T. Nolin, president of the Louisiana Association of Soil Conservation District Supervisors and producer of legume seeds, is an enthusiastic user of planned pollination. His colonies of bees now number several hundred. The failure of vetch to set seed

NOTE.—The author is chief, biology division, Soil Conservation Service, Fort Worth, Tex.



despite lush growth in irrigated sections of the Texas Panhandle has led district cooperators to obtain bees. Wild bees in that area are uncommon because of heavy grazing and extensive cultivation of the land.

A number of recent studies have shown the importance of wild bees in the pollination of legumes, especially bumblebees, sweat bees, carpenter bees, and leaf-cutting bees. They are said to be more efficient than the honeybee in many instances because they visit more plants (though fewer flowers) per unit of time, and carry pollen dry instead of moist. It is possible, through planned pollination, to increase wild bees near crop fields. An odd area set aside for wildlife on the farm of Delmar Pearson, district supervisor of the Cottonwood Creek Soil Conservation District, Okla., is heavily populated with bumblebees. Vetch planted on the cropland surrounding the odd spot is thoroughly worked by the bees. Bumblebees are perhaps Pearson's most valuable wildlife.

Hedgerows, especially *multiflora rose* hedges, are good wild bee habitats. Windbreaks and field border plantings are attractive to bees. The possibility of attracting wild honeybees to crop fields through the provision of nest boxes, similar to those used by wildlife managers to give homes to squirrels, raccoons, and wood ducks, seems to offer good opportunity for taking care of the pollination of nearby crops. Ordinarily, the destruction of bee trees and the nests of bumblebees is poor economy. The pollinating services thus lost are worth far more than the small amount of low-grade honey obtained.

An increase in Hubam clover seed production of 150 pounds per acre, and an increase in vetch seed yield per acre of 170 pounds, is attributed to his use of 20 hives of bees by Bill Cunningham of Greenville, Tex. He further estimated conservatively that planned pollination in 1947 accounted for \$30,000 of the value of the local seed crop. The Payne County Soil Conservation District reported average seed increases of 50 percent through planned pollination. A. H. Craig of Scott, Ark., stated recently that the use of 100 hives of bees more than doubled the yield of vetch on his farm.

R. S. Neitzel, Marksville, La., had difficulty in getting white Dutch clover to spread in his pasture until he obtained bees. He is satisfied that an increase in viable seed resulting from crosspollination accounts for the thickening stand of clover.

The American Federation of Beekeepers Associations and the various associations in the Western Gulf States have taken great interest in planned pollination. Their help to the Soil Conservation Service in developing the program and their cooperation with soil conservation districts have in a large measure contributed to rapid acceptance of planned pollination by farmers. Typical of the helpful attitude of these organizations is the offer of the Arkansas Beekeepers Association to see that bees are provided for every acre of legumes to be planted in soil conservation districts in the State. Planned pollination is now being recognized by farmers as being as essential to the production of good seed crops as are land preparation, cultivation, fertilizers, and favorable weather.

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**NO WATER RAN OFF.**—Homer Glover has more than doubled the cotton yield on 23 acres of his 160-acre irrigated farm in the Pecos Valley near Roswell, N. Mex.

When Glover purchased his farm in 1945, he soon found that a 23-acre area was extremely difficult to irrigate because the steep slopes allowed most of the water to run off the field and into the county road.

After farming the 160 acres for 2 years, Glover realized that he needed some trained help in solving his problems. His well was so located that it was necessary to use 2,100 feet of terraplane ditch in order to get water to some portions of the farm. His records showed that he was getting 1.75 bales of cotton per acre from his flatter land, but only 0.66 bale from the steeper slopes.

In February 1947, Glover asked the Roswell Soil Conservation District for assistance. SCS engineers being swamped with work at the time, Glover employed a commercial engineer.

The completed conservation plan called for construction of eight bench terraces 100 feet in width on the steepest 13 acres of the troublesome 23-acre field. The other 10 acres were to be leveled in two tracts. All layouts were designed on a uniform slope. Approximately 700 feet of the terraplane ditch were to be eliminated by land leveling and the addition of 12 drop structures in the ditch.

Glover leveled 55 acres in the spring of 1947 at a cost of \$39.12 per acre. Barnyard manure was supplied where required by cuts.

In estimating benefits, Glover says: "The cotton on the bench terraces and leveled fields produced as much the first season as on the other flatter areas where leveling was not necessary. No water ran off my farm last year, so I had more water for other crops which I had not been able to irrigate sufficiently in the past. When a 2-inch rain fell within an hour and a half, the bench terraces held all of the water."

The work which Glover did on his farm last year won for him first place in a soil conservation contest conducted by the *Roswell Morning Dispatch*.





# *Vacation awarded* hard-working district leaders

Beginning at left: Desert picnic in foothills of White Tank Mountains; watching a cotton-picker at work; plaques were presented in Des Moines by R. S. Wilson to Harvey Hansen, Fred Hopp, and Louie Fahrenkrug, winners from Iowa; from bleachers behind a corral the group enjoys a demonstration of stock handling. All the guests were outfitted with western hats, jeans, shirts, and sombreros.

By R. H. MUSSER

SIXTY-THREE midwestern farmers rolled out of Chicago, St. Louis, and Kansas City in chartered sleeping cars for a week's vacation in Arizona last November 28, their entire expenses paid by a large tire and rubber company of Akron, Ohio.

The group included the supervisors from one soil conservation district in each of the eight Corn Belt States of Iowa, Missouri, Illinois, Indiana, Ohio, Michigan, Wisconsin, and Minnesota, and three top-notch soil conservation farmers from these same districts. These were the winners in a year-long contest to determine the best job done in each State by a district governing body and the outstanding job of conservation farming in those districts.

The purpose was to recognize the time and effort expended in the public good by the farmers of this region who are running the soil conservation districts. It was felt that an attractive prize would do the trick. It all started back in 1946 when Robert Wilson, vice president of the Good-year Tire & Rubber Co., decided he needed a better land use and conservation plan for his Charlevoix County (Mich.) farm. He prevailed on Guy Springer, SCS man at Traverse City, to help him and his tenant, Ernest Brown, develop and apply

such a plan. As it turned out, the plan so effectively filled the bill that Wilson became completely sold on soil conservation. He wanted to work out something to help along the conservation cause on a broad scale.

The company decided to try the contest in a few States and selected those in Soil Conservation Service Region 3. William E. Still, an employee of the company, was made director of the competition.


One of the first steps was to appoint the following advisory committee: Chris H. Jensen, Audubon, Iowa, farmer-member of the Iowa State Soil Conservation Committee; Lloyd Arbuckle, Lake Village, Ind., president of the Indiana Association of Soil Conservation Districts; Russell Hill, East Lansing, Mich., executive secretary of the Michigan State Soil Conservation Committee; R. H. Musser, Milwaukee, Wis., regional conservator, Soil Conservation Service; H. C. Ransawer, Columbus, Ohio, director of extension, The Ohio State University; Wendell R. Tascher, Washington, D. C., extension soil conservationist.

This committee, with the help of some of the SCS staff at Milwaukee, worked out a score card as a basis for judging.

The committee suggested that the district supervisors be judged largely on the quality of leadership shown in handling the affairs of the district, although actual accomplishments of the people in the district would certainly reflect the leadership

NOTE.—The author is regional conservator, Soil Conservation Service, Milwaukee, Wis.





# aders

of the governing body and would be recognized, too.

The score card includes such items as the number of regularly scheduled board meetings, adequacy of minutes maintained, advance planning of board meetings, annual reports, percentage of board members having complete farm plans in effect on their own farms, and the number of newspaper articles and radio programs traceable to board members. Points were also given for many other accomplishments, including work with schools and churches, tours, demonstrations, window displays, and discussion meetings.

Points were given for the number of applications received for complete farm conservation plans, the number of farm conservation plans approved and signed during the year, and the operation of equipment by the district or by agreements with private, commercial, or public groups for establishing conservation practices. These are typical of the type of activities recognized to qualify for prizes.

Each district governing body was asked, in addition to keep a record of its own activities, to name three farmers in the district who had done the most outstanding job of conservation farming.

The contest ran from July 1, 1947 to June 30, 1948. It was judged in each State by a State judging committee appointed by the Goodyear Co., and the winners were given their awards at a State-wide recognition dinner as guests of the company. These dinners attracted as many as 400 guests and each program included a top-notch speaker. There were actually eight State contests, with eight winning districts.

At the award dinner, held in a central location

within the State, each member of the winning district governing body and each of the three winning farmers were presented with a beautiful bronze plaque. The runner-up district also received a plaque. And on the 28th of November the winning board and the winning farmers were taken on the 8-day trip to Arizona—an experience that all will long remember.

This contest did more than simply recognize the outstanding job done by the winning districts. Probably more important, it stimulated these farmers to do a still better job in managing the soil conservation districts. Many a district board would take the score card, go over it carefully to see where they were weak and then work hard to strengthen that part of their program. Hugo Heartling, chairman of the winning Illinois board said, "Even if we had lost, we would have won, the contest did so much good and helped us to do a better job."

Here are some examples of a few things some of the boards did in order to win. The Harrison County (Mo.) Board met every second Tuesday of each month without fail. They organized 26 neighborhood groups for farm planning work. They approved 65 farm plans during the year and conducted a plowing contest and soil conservation field day that drew nearly 10,000 people.

The Van Buren (Mich.) Soil Conservation District employed its own executive secretary to help the directors carry out the details of the program. In cooperation with the county agent, the Soil Conservation Service, the State college, and local fertilizer dealers, they set up a soil-testing laboratory to help the farmers in the district with their lime and fertilizer problems. The district leased 400 acres of forest land where it can demonstrate reforestation and good forest management on land not adapted to growing other farm crops.

The commissioners of the West Pottawattamie (Iowa) Soil Conservation District sponsor farmer-conservationist training schools each year. The farmers attend these training schools, then go out to their respective communities and assist their neighbors in establishing simple conservation practices.

The Shilo-O'Fallon (Ill.) District conducted a regular 15-minute radio program over radio station WTMV in East St. Louis. The chairman appointed one member to be responsible for these programs, which were rotated among the members, and each man wrote and presented his own script.



The East Agassiz (Minn.) Soil Conservation District is located in the Red River Valley. Its two main problems are wind erosion and surface drainage. During the year the district constructed 65 miles of open-field ditches by removing 300,000 cubic yards of earth, benefiting 20,000 acres of cropland. The district accomplished this with two heavy tractors and carry-all scrapers borrowed from SCS. This district also planted 30 miles of field windbreaks, some 250,000 trees. Wind strip cropping was applied on 20,000 acres.

The Belmont (Ohio) Soil Conservation District went after the award in a businesslike way. In planning the year's work they surveyed the demands for technical assistance that were on hand and agreed that 100 conservation farm plans could be written. *This was double that of any preceding year.* In order to get this done, they set up three courses of action: First, they wanted to make every person in the district soil-conservation conscious. They appealed to press, radio, youth groups, clubs, churches, and schools, Federal and State agencies, industrialists, and business and professional men. The response was amazing. Second, they obtained the assistance of laymen. Third, the local SCS technicians' time was to be used more effectively by planning in neighborhood groups rather than each farm individually.

There was work for everybody. H. D. Groves, the chairman, delegated responsibilities to all the members. They got cooperation from everyone. As the year drew to a close they checked their accomplishments against the score card. They saw that they needed more neighborhood groups for farm planning. Although it was a busy time with haying and wheat harvest, Chairman Groves agreed to get three more neighborhood groups. Seven neighborhood leaders responded and presented applications signed by individual members of each group. Groves remarked that nothing in his whole life had given him more satisfaction than to see seven neighborhood groups in his own and the neighboring township apply for group planning in response to his appeal. And so they won the Ohio contest, and all agreed that not only was it fun but that a lot of good had been done.

The Lincoln County (Wis.) Soil Conservation District worked out an agreement with the county highway commission whereby the latter furnishes the large power patrol graders to construct and establish such practices as terraces, open ditches,

terrace and open ditch outlets, diversion ditches, etc., on individual farms.

The attitude of the Knox County (Ind.) Soil Conservation District Board is reflected in the statement by Ernest B. Miller, chairman. "I am a third-generation farmer. A good part of my farm came to me through my father and my grandfather. I have children who may wish to carry on this ownership and tradition. The choice will be their own, but if they choose to farm this land, I want to pass it on as good or better than it was when I began to farm it."

Lester Williams, another member says, "Wouldn't it be a wonderful thing if we could show every farmer how it would help the community if he would keep all his soil and more of his water at home? To my way of thinking there is nothing quite so important in getting this job done than a lot of pasture and a good bunch of cattle."

These are just a few of the outstanding accomplishments of the winning district boards.

The climax, of course, was the trip to Arizona.

They arrived in Phoenix on the morning of November 30 and were taken in chartered buses to the company's 16,000-acre holdings known as Litchfield Farm. For 3 days they observed operations on the farm, saw sights around Phoenix, rode a blimp, toured the mountains, and had a big time.

The farm is operated under a conservation farm plan in cooperation with the local district. It is irrigated, and largely in cultivation. Cotton, alfalfa, barley, and sorghum grains are the main crops. The use of irrigation water and the growing of cotton were of special interest to cornbelt farmers.

Another contest is now under way in the same States. While the prizes are changed somewhat from last year, competition promises to be keener than ever.

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**MONEY DOWN THE DRAIN.**—"Repairing a farm is like repairing an old house," says Paul Klopfer, farmer in the Otero (N. Mex.) Soil Conservation District. "When you go to repair an old house, if you don't plan your work pretty carefully, you'll waste a lot of time and money doing things 'over.'"

Klopfer says that he spent a lot of money and hard work on his place, but much of it was wasted because he put gully plugs in the wrong places and didn't protect his leveled land or terraces. His plan, designed with the help of Soil Conservation Service technicians, changed matters. "We now have the erosion and water waste problems about whipped. I'm getting greater production per acre now than ever before by about 25 to 30 percent."





# *Land and Water* **PROBLEMS**

## **in the ANGLO-EGYPTIAN SUDAN**

By **ANDREW de VAJDA**

**I**N CENTURIES past the Sudan was more fortunate regarding its soil resources than most African countries. Wars, slave raids, the tsetse fly, and all kinds of tropical diseases kept the population low, both human and animal. In a large degree, Nature was able to maintain the balance at the expense of man. Even now, after 50 years of complete security, the population does not exceed 7.5 per square mile in this vast territory covering a million square miles between the Libyan Desert and the equator, with the Red Sea on the east and the Tibesti Plateau on the west.

Curiously enough, war and insecurity even helped to establish and maintain soil conservation methods in the hills of central Sudan, where there is an astonishingly well-built system of stone terraces, built by the ancestors of the mountain people and covering very large areas. It was the constant danger of raids which forced the Nubas and Furs to remain in the hills and to keep up their terraces as the only means for continuous cultivation on the steep slopes.

In the tropical south with its large swamps, the almost impenetrable tall grass, and the forests made not only cultivation but life in general difficult. The activity of man was limited to producing food for his own needs. Clothes were not needed, and almost no goods were wanted which could have stimulated agricultural production.

Through these adverse factors, great areas of fertile clay plains and good grasslands remained

uninhabited, the situation being aggravated by complete lack of drinking water during the long dry season lasting in the central and northern Sudan 8 to 10 months of the year.

But times are changing in the Sudan. Public health service, with effective drugs and vaccines, and undisturbed peace and security already have increased human and animal populations in the last half century. Development of transport, introducing desirable goods into remote places, has had a stimulating effect on the activity of primitive tribes. The great success of big irrigation schemes, sponsored and partly run by the Government, and the introduction of cash crops, such as cotton and oilseeds, are working in the same direction. Finally, there is the recently introduced mechanized farming, for sorghum and ground nuts (peanuts), which may have considerable influence on land use and progress in general.

These changes do not seem to be favorable from the conservation point of view.

There are today innumerable examples of soil deterioration in the Sudan. The people's nomadic way of life and methods of shifting cultivation, likely to persist for some time to come, are accompanied by the burning of grass and cutting of trees. Their cattle and other herds, especially goats, constantly destroy the vegetative cover around settlements so that the land generally is badly eroded or is deteriorating rapidly. Sheet erosion, spreading from the peripheries of towns and villages, is occurring between the terraced lands and clay plains of Kordofan, the large and important central province. It also is widespread in the hilly parts of Equatoria Province and near the gullied lands of the Blue Nile. Damage to agricultural land by dune formation is taking place at an alarming rate in the Tokar Delta.

NOTE.—The author is Soil Conservation Officer, Department of Agriculture for the British Government, Anglo-Egyptian Sudan.





One of the big earth tanks being constructed in the Sudan's soil conservation program. Depth, 20 feet; volume, 15 million gallons.

Gully erosion is common in Equatoria Province, along the Blue Nile and the River Atbara, in cultivated districts of the Kordofan, and in the coastal range of hills in Kassala Province. Impoverishment of land by fires is common throughout all of Central Sudan. It is apparent that real pressure on the land is in sight.

Fortunately, the Government is aware of the danger and the great importance of soil and water conservation. A Soil Conservation Committee was appointed in 1942, with the task of reporting the situation, making recommendations as to necessary technical and legislative measures, and drawing up a soil and water conservation program for the country.

The report was completed in the spring of 1944, and that year a Soil Conservation Board was formed under chairmanship of the Director of Agriculture and Forests and with participation of the political, financial, economic, and technical departments and experts. A Soil Conservation Service was set up to function in the Department of Agriculture in cooperation with the Drilling Section of the Geological Survey. Conservation of forests rested with the Forestry Division of the Department of Agriculture.

All conservation schemes, including the rural water supply project, are under control of the Soil Conservation Board, regardless of where the necessary funds come from. In actual execution of the work, all projects are cooperative between the Soil Conservation Service, the Drilling Section, and the Forest Services, while the chief promoters of the schemes are the administrative districts and the inspectors of agriculture.

In the Sudan the tasks and methods of conservation must differ widely. The rainfall is zero on the Egyptian border, 7 inches at Khartoum, 20 to 30 inches in the central belt, and 60 inches in parts of the Congo divide and the Kenya border.

The soil is rocky and sandy in the northern desert, with a green strip along the river only a few hundred yards wide. Desert merges with a belt of thorny savanna with improving grass cover to the south. In the west the soil is composed of fixed aeolic sands. In the central part heavy clays prevail. Vegetation changes with increasing rainfall to grassland and acacia, then to vast treeless swamps, park-like country and tropical forests. In the south it becomes more and more luxurious, with wildlife abundant. The country is teeming with wild buffalo, elephant, rhinoceros, lion, giraffe, and various kinds of antelope. Swamps and rivers are full of water birds, hippopotamus, and crocodiles.

The difference in climate and vegetation is accompanied by a difference of population. The north is an Arabic speaking country, Moslem by religion, belonging to the Middle East, although greatly intermixed negroid races are found, a result of the universal institution of slavery in the past.

The south is inhabited by pagan, negroid tribes, belonging ethnographically and geographically to central tropical Africa.

Two parts of the Sudan differ in everything but in the basic fact that agriculture is and will remain the main source of life in the country.

The type of agricultural production, as between the two parts, will remain different. The south will continue to produce more and a greater variety of tropical crops for which conditions are excellent. The north is well adapted to cattle, camels, and sheep, and these will expand and improve with development of water supplies. Forests will gain in importance as the population increases and local needs develop, if forestry agencies are adequately supported.

The main food crop is the sorghum millet; the main edible oil, sesame; and the main cash crop, cotton—the long staple variety grown with irrigation, and the short staple grown in the south and the central Nuba hills. The gum gardens of the acacia forests are confined to the central belt. They supply about 70 percent of the world's production of gumarabic.



Apart from the narrow strip on the Red Sea coast and a small area in the west, the whole Sudan belongs to the Nile Valley. It is this great stream which supplies the people with drinking water in the dry season and with grazing grounds when the floods recede. Even in the central belt the people move to the river, from many hundred miles away, during the long dry months. Irrigation with Nile water, which could substantially improve agricultural development, is limited by the water agreement with Egypt. The promising Sudd cut scheme, designed to reduce the swampy conditions in the White Nile basin north of Lake Albert, probably will be carried out soon by the Egyptian Government in Sudan territory. Water losses in these swamps, which could be utilized by the cut, are estimated at 25 million acre-feet.

At present, only about 820,000 acres are irrigated in the Sudan, and although not all the flood water of the Nile is used, even the future possibilities are reserved for the country to the north. The only remaining thing for the Sudan, therefore, lies in dry farming development by conservation methods. It is this task which is being undertaken by the soil and water conservation organization established in 1944.

With the millions of acres of good clay soil not yet utilized and with good grazing land in many parts of the country, the problem at present is generally reduced to a water supply question. In large areas of the fertile central belt and also in the south, there is enough rain to grow a crop but no drinking water for the time of harvest.



These stone terraces are seen in most of the Sudan's hill and mountain areas. They were built by the ancestors of the Mountain people centuries ago. The lower terraces are still used by Nubas, Furs, and other native tribes for growing food crops. Many terraces are at an altitude of 2,000 to 3,000 feet.



Stone work for control of gully head in Darfur province. This method is used in combination with earth banks to slow down runoff and to flood well field.

Furthermore, great areas of the country are without ground water, so far as is known. Conservation of rainfall thus is the main task in all parts of the Sudan, although the south presents, of course, different problems from those in the north.

In the north, it is the slowing down of runoff for conservation of moisture in the soil that we are trying to achieve. Contour ridges on flat slopes, a long-used practice, are constructed and used mainly for sorghum and tobacco. On the Red Sea coast with its numerous small streams, water spreading by use of diversion dams has been introduced. The dams are similar to those used in the water-spreading operations along the arroyos of New Mexico. We are trying now also to introduce machinery for contour terracing and for retention dams and spreading wing banks.

In the central belt of moderate rainfall our main problem is to store all the rain that falls and get it to centers of cultivation. There are a few good sites for dams in the hills, but it is mainly in the plains where water is most urgently wanted. For this we are reviving old earth tanks constructed in the past by slave labor, now replaced by carry-all scrapers and draglines. Our earthen reservoirs, often of 100,000 and more cubic-yard volume, have to be very deep, as evaporation takes a monthly fall of 1-foot depth.

In our shifting cultivation, we are attempting to keep burnings under control. For this we have started regular fire lining (fire lanes) all over the central belt, and also in the forests of the south.

With the growing importance of cattle trade, the spreading of watering points along cattle



routes and in new grazing land receives preference over many other needs.

Protection of town and village peripheries against overgrazing, which cause wind erosion, is a major item in our program. Planting tree belts, control of growing forest plots for fuel, and introduction of dairying on irrigated areas are the main measures employed.

In the south, creation of forest reserves is one of the most important steps toward soil and water conservation. This is vital on the Congo-Nile divide and on hill slopes east of the Nile. Sheet erosion has increased lately, and runoff conditions have become worse. The Forest Administration already has established an area of forest reserves covering about 200 square miles. According to our program, 3,800 square miles should be established mainly for protection of drainage areas. About three-fourths of this area is in the south.

We are trying also to introduce more and more conservation methods of farming, such as strip cultivation and contour planting. In this connection we have established a special training school in the south to train young agriculturists in use of conservation methods.

We know that we are only at the very beginning of our task and that the more we advance the more complex our problems will become. Thus far, we are only in the experimental stage. But we feel sure that conservation, which existed in the past and can still be seen on the terraced hills and contour-ridged slopes, but which was lost by the nomad way of life, can be brought back to the Sudan.

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## NORTHEAST

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**TOMATOES FOLLOW TILE.**—For 18 years Douglas Proctor, of the Worcester Soil Conservation District, Mass., tried to grow lettuce and tomatoes in one of his fields, but only once in 4 years was he able to get a good crop. The soil was too wet and too heavy for cultivation. Now, as the result of a tile drainage system, laid out by SCS technicians as part of his complete farm plan, the condition of the soil is perking up and he is on the way to top yields every normal year. Capturing the productivity of this field came through construction of 950 feet of 6-inch bell-type tile main drain and more than 2,600 feet of 4-inch tile laterals. Through stones and hardpan the rotary ditcher daily made 800 feet of cuts as deep as 7 feet in the main line. Joints were covered with tar paper and the trenches back-filled with about a foot of sand before the bulldozer finished the filling-in job.

**POULTRYMAN WINGS TO SUCCESS.**—Preston Unger, Morgan County, W. Va., poultry farmer, operates 76 acres which he inherited and 92 more which he purchased.

In 1940 he was thoroughly disgusted with the run-down soil he inherited. He also needed money. He wasn't at all sure that he wanted to continue to farm.

Finally he got started through a 40-year FHA loan. Almost his first step was to obtain a complete conservation plan through his soil conservation district. By applying sound practices, he was able to pay off his loans in 5 years. In 1940 his net worth was not more than \$500. Now, after 8 years, he has paid off all debts and loans, has clear title to his farms, has built new poultry and broiler houses, laid 210 rods of fence, and repaired and improved his house.

His 300 laying hens are making good production records, and 300 pullets are just starting to produce. Last year he received more than \$3,000 from eggs, \$500 from broiler sales, and \$700 from cattle.

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**STONES CLEARED AWAY.**—Using an 11-ton angle dozer and a steel stone boat, H. P. Sweet, Twin Valley farm manager at Pepperell, Mass., in the Middlesex Soil Conservation District, cleared the boulders from 13 acres of stony pasture land at a cost of \$27 per acre. The job was done by a contractor who angled the dozer blade and pushed the stones into windrows. These were then pushed on the boat and hauled away, leaving the field smooth. No topsoil was lost. The area cleared has been seeded and has become excellent pasture land, previously useless except as woodland.

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**MORE GRASS, LESS MUD.**—A year ago, Ernest Blisson's 20-acre pasture near Montpelier, Vt., was wet, rough, stony, and overgrown with hardhack. There was very little grass for his cows. When they were in pasture their bags were caked with mud and many of them developed hoof rot.

Winooski Soil Conservation District technicians helped him make a conservation plan for his farm. It included a diversion ditch, and clearing and smoothing of the pasture tract. Blisson removed small stones, harrowed limed, fertilized, and seeded the land at a total cost for all operations of \$1,468, or \$73 per acre.

Late in the 1948 season, Blisson pastured 72 cows for 24 days on the 20 acres. During that period his milk production was worth \$84 more than for that period a year earlier. He also saved the feeding of grain worth \$553, a net cash gain of \$637, or \$31 per acre for the season. He'll be banking the added profits in 1949, after paying off the total cost of the pasture improvement.

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**BOTTOM-LAND ENGINEERING.**—Merrill Weeks, dairy farmer near Claremont, N. H., is thoroughly sold on the value of soil conservation practices. One installation alone has given him back the use of several acres of fertile Connecticut River bottom land.

Weeks' troubles started with surplus water pouring out of a ravine during heavy rainfalls and rushing over a large field where it spread out and seeped into the soil. It became so wet that he couldn't work the land with machinery.

Technicians, working with the Sullivan County Soil Conservation District, made detailed plans for a waterway that Sullivan built with a bulldozer. With a grade of only five-tenths of 1 percent, it is 1,300 feet long, 20 feet wide, and 2 feet deep. Seeded to grasses when the land was dry, it now carries 96 cubic feet of water per second so slowly that there is no gully, and it can be crossed anywhere with machinery without difficulty. It has a capacity of more than 100 cubic feet of water per second at a maximum velocity of about 4 feet per second. When there is extremely heavy and long rainfall, the water is diverted to pasture where it does no harm, and the field is back in full use.



## SOUTHEAST



**VETS SAVE SOIL.**—A total of 268 farms in the Conecuh River Soil Conservation District of Alabama are being operated with soil conservation plans by veterans of World War II. Although many of the plans were made since the spring planting season of 1948, these men have seeded 425 acres to sericea, planted 581 acres to kudzu, seeded 2,993 acres of blue lupine, 214 acres of Caley peas, and 158 acres of reseeding crimson clover. The veterans also terraced 2,512 acres and improved 774 acres as pasture.

**COUNTY-WIDE PLANNING MAP.**—Holmes County Soil Conservation District in Mississippi has developed a map of the district which shows by a system of colors the general type of farming best adapted in each section to insure a safe and permanent agriculture.

The map of the district showing areas with similar conservation problems, previously prepared in the study of the district conservation job ahead, was used as a base. The colors correspond to the standard colors of land capability maps and the recommended land use is similar to the general recommendations in the land capability tables for the corresponding land capability classes. Thus, light green is used to designate areas suitable for row crops, yellow for row crops primarily and some grasses, red for grasses primarily and some row crops, blue for grasses and close growing annual crops, dark green for grasses and trees, and brown for trees and grasses, with emphasis on the first land use mentioned for each area.

Although portions of each area are adapted to other uses, farm plans are being developed insofar as practical in line with the general type of farming needed for the area, as well as by the land capabilities of the farm itself. This procedure is enabling farmers to plan their operations in keeping with those of their neighbors and has aided the district in getting across the idea of what constitutes a sound farm program for each area.

**VALUE RAISED \$4,000.**—Saunders Watkins, coowner of a farm in the Marshall County Soil Conservation District that had its face lifted during the Kentucky Conservation Caravan last fall, has had an opportunity to observe the effectiveness of the operation and is tremendously impressed.

"My wife and I went out to look the terraces over after a big rain and we decided they were all right," he said. "The water and the soil were held on the farm in a wonderful way. The contour plantings have also been a great help. The pond is about half filled now and is holding fine. The drop inlet and the roadside ditch are working and have resulted in a wonderful improvement in the looks of the farm. The waterways and terrace outlets are holding. The grass seedings have come up perfectly. We didn't know how much soil could be saved by conservation

practices until we saw the results on our farm. We think soil and water conservation have increased the value of the farm by not less than \$4,000."

**KUDZU ENSILAGE.**—When a long summer drought reduced his yield of grain sorghum, A. R. Lawson, cooperator with East Alabama Soil Conservation District, filled an 80-ton trench silo with lush, green kudzu, which was unaffected by the dry weather. Kudzu planted for erosion control is thus providing emergency winter feed.

The ensilage crew consisted of five men. One man operated a tractor mower with a windrow attachment. Another followed with a tractor-drawn machine which picked up the kudzu, chopped it, and blew it into a four-wheel trailer. As the 2-ton trailer was filled, it was disconnected and an empty trailer was picked up. A third man hitched a jeep to the full trailer and towed it to the trench silo.

As the trailer was towed through the trench, a chain attached to a false frame built into the trailer pulled the frame out of the trailer, unloading the chopped kudzu. The fourth and fifth men handled the unloading and wetting down. A mixture of 5 gallons of molasses and 40 gallons of water was applied to the kudzu at the rate of 6 gallons per ton.

**CONTOURS ON THE SAND.**—Herbert White, past president, North Carolina District Supervisors Association, said recently "Waste of resources has got to stop . . . If we work together we can do the job better . . . Our work won't be complete until farm children playing in the sand just naturally run their miniature crop rows on the contour."

**INHERITED TRAIT.**—Grady Cole, farm program director, WBT, Charlotte, N. C., recently remarked: "Until babies are born with a knowledge of soil conservation, there'll always be a place for the work you supervisors are doing."

## UPPER MISSISSIPPI



**CHRISTMAS THE YEAR AROUND.**—Directors of the West Ottawa (Mich.) Soil Conservation District again report a very successful Christmas tree sale from lands that in many cases were tax delinquent in 1938. This year's sales of approximately \$300,000 brings the total Christmas tree sales in the West Ottawa district to well over the three-quarters of a million dollars, which is more than three times the amount of Soil Conservation Service funds that have been put into the district in the 10 years of their existence. In addition to harvesting more than three-quarters of a million dollars worth of Christmas trees, the landowners still have a good forest cover on the land and potential pulp crop 15 to 20 years hence.

This income from Christmas tree sales is strictly from



land that had previously been considered of little or no agricultural value. In the '30's this land could be bought for the taxes in most instances and even today is not selling for more than \$25 an acre. It is selling for that price only by virtue of the satisfactory income farmers have learned they can make from this land through the production of Christmas trees and pulpwood. In addition to the income from trees on this low-grade land, it must be borne in mind that the work from the district in Ottawa County, Mich., has benefited much good land in the county, amounting to considerably more dollars than the sale of Christmas trees.

The topic of soil conservation comes up in many places in Michigan. The most recent unusual request was from the Grand Haven Township Fire Department, which asked for a meeting and discussion on soil conservation, and more information on prevention and control of grass fires and woods fires.

**PUT IN DISTRICT'S CARE.**—In the Van Buren (Mich.) district 40 acres of timber was given to the district with the understanding that it be managed under good forestry practices. The farm forester is developing a forestry management plan for the tract.

**PLANTING STOCK NEEDED.**—Districts are beginning to be concerned about their supply of forest planting stock for next spring. Practically all sources of planting stock in Michigan are sold out, and with the comparatively small number of trees SCS is able to furnish, the planting program in Michigan will be materially reduced this coming year. One commercial tree planter operating in a district indicated that he had bona fide orders for the planting of 350,000 and that he could easily handle a million trees if good stock were available.

**FEWER FIRES.**—The topic of soil conservation comes up in many places. The most recent unusual request was from the Grand Haven (Mich.) Township Fire Department which asked for a meeting and discussion on soil conservation, and more information on prevention and control of grass and woods fires.

**TOP FARMER TALKS.**—Warren C. Lyman, cooperator with the Rice County Soil Conservation District, Nerstrand, Minn., writes as follows:

"I am 38 years of age, married, have two boys and two girls from age 6 to 14. We rented farms for 12 years before buying this place of 120 acres. At the time of purchase we were only able to make a small payment but a lawyer in a nearby town had faith in us and the farm. This farm is quite rolling, was badly eroded, fertility was way down but still carried the reputation of being a good farm from former years.

"One of the first moves I made was to enlist the aid of the Soil Conservation Service. They really had something to offer; they didn't give me lip service or a pamphlet telling me to do this or that; they came out and laid my farm out according to approved plan. Results were slow but gradually things began to click! By following approved rotation we have more than doubled our oat crop from 20 to 60 bushels per acre, corn from 35 to 60 bushels, hay from 1 ton per acre to 2½ and 3. But best of all we have the gullies under control. Anyone can drive an automobile across any water runs we have where you couldn't drive a team 5 years ago. We have saved tons of topsoil with contour strips and have built up what we did have by good rotation.

"Maybe this should be the end but it isn't. With the good crops we were enabled to raise, we have been able to increase our livestock, have added new farming equipment, have modernized our home. We have built a new silo and new steer shed, and painted the house and barn. We still owe some on our farm; we don't claim to have the

best farm in the State, but with the help of your soil service we have made a fair farm one of the better ones.

"This year our family was honored by the *Faribault Daily News* in a large write-up in connection with our farming activities. Last week we were notified that our farm was named first in this soil district for soil conservation work during 1948 in a contest sponsored by the *Minneapolis Star Journal*."

## WESTERN GULF



**SMART INVESTMENT!**—Two banks at Forrest City, Ark., have decided to give a year's subscription to SOIL CONSERVATION to each new district cooperator during 1949.

**DISTRICT TO OPERATE MODEL FARM.**—The Collin County Soil Conservation District is one of the newer districts in Texas, but it is starting big things. One project that has been undertaken by the board of supervisors is the purchase of a 210-acre typical run-down blackland farm that is to be the subject of a big 1-day face-lifting show next September. Several of these shows have been held and will be held over the country, but this is believed to be the first one on a district-owned farm, and this is believed to be the first farm that will be operated from now on as a model conservation farm.

The idea of having a field day on a privately owned farm originated with Jim Cantrell, cashier of the Citizens' State Bank, Princeton; Malcolm Wilson, McKinney farm implement dealer; Roy Roddy, farm editor of the Dallas Morning News; and Murray Cox, agriculture editor of Radio Station WFAA in Dallas. They discussed the idea with members of the board of supervisors and the McKinney Chamber of Commerce who received the suggestion with enthusiasm. It was decided not only to have a big field event, when the bulk of the work was to be done on one day in the fall of 1949, but also to have an annual field day on the farm to observe the results of carrying out a complete conservation program.

At this point the board of supervisors began looking around for a farm on which it would be feasible to carry out the program over a period of years. A farm centrally located and sadly in need of a complete conservation program was purchased by the board for this purpose. It represented just about everything bad that has happened to the blackland section of Texas: low crop yields due to continuous cotton and over 100 acres of idle, weed-grown, gullied, and overflow land. It was no trick to make a deal for its purchase, as it had not proved profitable to either the owner or the tenant. One hundred civic-minded people in the McKinney, Princeton, Plano, Melissa, Farmersville, and Celina localities made a loan to the board, which will be paid back out of earnings.

Seventy percent of the land in the Collin County Soil Conservation District is tenant-operated, and something of a model tenant-landlord set-up will be used in an effort to set a pattern. A half-and-half division of livestock, one-third of feed crops, and one-fourth of cotton will be charged for rent. The lease will be for a long period of time.



According to the conservation farm plan, prepared by the McKinney work unit of the Soil Conservation Service, 74 acres will be used for cropland, 88 acres will be used for permanent shortgrass pasture, and 41 acres will be used for permanent tallgrass pasture. Improvements, including a Grade A dairy barn, will be constructed on the initial field day. Plans for the farmstead are being developed by the A. & M. College Extension Service and are not yet complete. There is not even a house on the place at the present time. The Collin County Soil Conservation District Board of Supervisors are: A. L. Gambrell, chairman, Copeville; John D. Wells, vice chairman, Plano; Howard Logan, Celina; Charlie Cantrell, Valdasta; and J. C. Loughlin, Wylie.

**RANGE-MANAGEMENT CONTEST.**—Next fall a lot of budding ranchers in the North Concho River Soil Conservation District of Texas will have extra cash jingling in their jeans and hard facts of range conservation management clicking in their heads.

On November 1 will end a year-long range management contest—one of the toughest ever thought up by hard-headed district supervisors. The board members are Zach Jones, chairman; Foster S. Price, secretary; J. R. Mims, Lee R. Reed, and J. W. Cox. The contest was open to any FFA or 4-H Club member who could get use of a pasture in the district.

The boys will have to do a lot of work to win any of the 20 prizes ranging from \$9 to \$100. But when it's all over, they'll be well grounded in fundamentals. "They'll know about our district program, and that's important, for these boys are going to own and operate this land of ours," says Jones.

Besides making periodic field trips to learn about range management on the site, the boys must map their pasture to show the various soils and the condition of the range, record erosion conditions, and catalog important forage plants in relative percentage of the total vegetation, find out the volume of feed grown on the range, and keep tab on the amount of litter from start to finish of the contest.

They also must keep a lot of records, such as the number of stock grazing the pasture, the calf and lamb crops, the wool production, the market weights, the rainfall and its penetration on bare and grassed areas, and the soil temperatures. At the end they'll have to take an examination to show what they've learned.

—E. J. HUGHES.

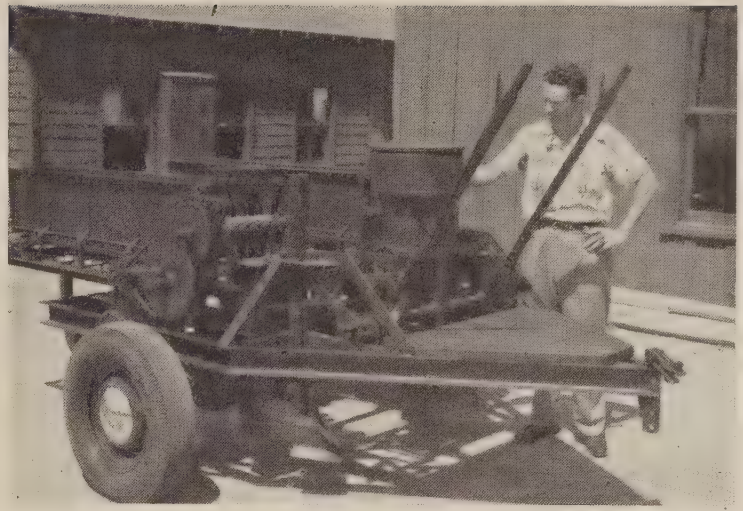
**MAN OF MONTH.**—Once a month the *Paris (Tex.) News* is running an illustrated story about "the farmer of the month," chosen by a committee composed of James E. Vance, Lamar County agent; N. A. Cleveland, Farmers Home Administration; Roy P. Mason, Production and Marketing Administration; and Carl L. Young, Soil Conservation Service. Selection is based largely on the progress the individual farmer has made.

As a further honor, the Chamber of Commerce of Lamar County makes each "farmer of the month" an associate director. Each farmer selected will attend the chamber's monthly luncheon meeting for directors from the time he is officially designated "farmer of the month" until the end of the year.

A front-page story with pictures is written about the "farmer of the month" by Ed Bryson, *News* farm editor.

The first "farmer of the month" was Arthur E. Woodall, of the Pattonville community. A cooperator with the North Texas Soil Conservation District, he has been applying a coordinated conservation program to his farm.

This new feature is one of the ideas worked out by Publisher A. G. Mayse, Managing Editor Bob Vickery, Farm Editor Bryson, and other staff members to promote interest in soil conservation and thus increase the agricultural wealth of the area. Mayse is widely known for his interest in soil conservation. Recently he has been doing an outstanding job organizing chapters of Friends of the Land.



**BERMUDA-GRASS SPRIG PLANTER.**—A machine that will plant Bermuda grass sprigs at an average rate of 2 acres an hour has been developed by SCS at Fort Worth, Tex.

About 2 months' field experience with the planter on the farms of soil conservation district cooperators has proved its satisfactory performance.

Improved methods of seeding Bermuda grass successfully on the sandy and more fertile soils have speeded up use of the grass. But on tight, heavy soils, on eroded and depleted soils, and in waterways used for the disposal of surplus water, Bermuda must be sodded or sprigged.

Much sodding and sprigging has been done by hand but that requires too much time and labor.

Various kinds of planting equipment have been made and used in the past, and their good points, plus new ideas, were included in the new machine by its developers, Paul M. Browning and DeBoy Wheatley.

The Soil Conservation Service is having 10 of the planters made for use in the Washita River Flood Control Watershed in Oklahoma. More will be ordered later for the Trinity River Watershed in Texas.

In addition, many soil conservation districts are having the machines built for cooperators.

Several persons have indicated their interest in obtaining planters for doing custom work.

The planter weighs about 1,800 pounds. It can be pulled readily by a farm tractor. It plants two rows at a time, 39 inches apart. A lever setting regulates depth of planting. A fertilizer distributor permits applying fertilizer at planting.

The soil is covered and firmed after the sprigs are planted.

The new machine undoubtedly will mean that Bermuda grass pastures, meadows, waterways, and terrace outlet channels will be established faster and at less cost.

—W. M. NIXON

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## SOUTHWEST

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**COTTON RESPONDS.**—Proper land preparation, conservation of water by ditch lining, and suitable fertilization is just like cash in the bank to H. D. Conner, vegetable grower and packer who operates a 400-acre farm in the New River Soil Conservation District 13 miles north of Phoenix, Ariz.

Conner cites the fact that his soil and water conservation program already has increased his cotton yield more than a bale to the acre above the average production for the Salt River Valley.

The value of such practices long has been recognized by Conner. In 1946 he called upon the supervisors of the New River district for assistance in establishing a complete program on his farm. Marvin Skousen, SCS, assisted in preparing Conner's program.



They agreed that the entire farm should be properly leveled for efficient irrigation and that distribution ditches carrying water from the wells should be concrete lined unless the water was to be delivered through underground concrete pipes.

They also agreed that a rotation of cotton, grain, alfalfa, and vegetables, in conjunction with livestock pasturing, probably would be the best plan for improving soil fertility. It was decided that the use of commercial fertilizers and all crop residues would be a yearly must, and that a green manure crop should be turned under every fourth year on each 40-acre tract.

Land leveling required 6 months and many days of surveying, since cuts up to 3½ feet and fills of about 2½ feet were necessary. This work was completed early in 1948, as was the job of lining 13,020 feet of ditches with concrete and the laying of 2,640 feet of underground concrete pipe.

These practices paid dividends during the first cropping year after completion, for Conner produced two and a half bales of cotton per acre as against an average yield for Salt River Valley of less than one and a half bales.

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**RIVERS OF MUD.**—The equivalent of a 10,000-acre farm with 1 foot of topsoil is going down the Colorado River, and at least half of this is coming from Utah.

This is the startling statement which A. Golden Kilburn, Utah extension soil conservationist, is presenting at a series of group meetings being held over the State.

Another interesting figure offered by Kilburn is that during flood season on the San Juan River in southeastern Utah, a measurement of the soil content of the water indicated 37 percent of the stream was soil.

"The stream didn't run; it just rolled like a huge mud ball," Kilburn declared. "If the soil fails we will fail not only as individuals but also as communities, as a State, a Nation, and even as a civilization."

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**FANCIER FIGURES.**—E. Frank Winfield placed his 213-acre farm under cooperative agreement with the Fort Collins Soil Conservation District in Colorado, in November 1945.

His farm plan involved revamping the entire irrigation system, leveling about 50 acres, seeding 45 acres to grass, installing 3,000 feet of ditch lining, removing 1,500 feet of old ditch, installing 1,200 feet of irrigation pipe line, and soil management features, such as fertility improvement and crop rotation.

In 1945 Winfield's farm yielded about 29 bushels of barley per acre, about 23 bushels of wheat per acre, and 1.75 tons of alfalfa per acre. In 1947, all grain on the place averaged 65 bushels per acre and alfalfa made some 3 tons per acre. In addition, 11 acres of potatoes yielded 209 sacks per acre and corn produced about 100 bushels per acre.

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**SAGEBRUSH MAKES WAY.**—Conversion of 35 acres of sagebrush land into profitable hay meadows and grain land is the accomplishment of Harvey S. Lobdell on his Green Mesa Ranch on Quartz Creek in Gunnison County, Colo.

Lobdell started clearing sagebrush in the spring of 1947, carrying out his soil conservation program in cooperation with the Tomichi Soil Conservation District, of which he has been a director from the first.

Using his own equipment, including a big bulldozer and carry-all, Lobdell first cleared sagebrush and willows from 13 acres of creek bottom land. He then planted grain and harvested a very good crop in the fall of 1947. This year he planted 11 acres of this tract to barley and the other 2 acres to potatoes, and harvested bumper crops.

Lobdell cleared still more sagebrush land in the fall of 1947 and now has an excellent stand of winter wheat on 5 acres, 2 acres of barley, 5 acres of fine hay, and another 5 acres which have been planted to five varieties of grasses.

In connection with his complete soil and water conservation program, Lobdell also has constructed an irrigation ditch which carries water high up on a hillside.

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**ACTION!**—Some of the oldest farming communities in the Nation lie within the soil conservation districts clustered around Santa Fe, N. Mex. In these communities, the centuries-old technique of accomplishment through *group action* has been put to work effectively in speeding up and improving the soil conservation program.

As a result of such group action it has been possible to spread SCS technical assistance more widely and evenly among 600 individual cooperators and some 34 irrigation enterprises with 870 participating landowners.

Dating back to early Spanish settlement, natural groups have traditionally met for social, religious, political, or other purposes under leaders whose judgment and experience are generally respected and relied upon. The adaptation of group action to the soil conservation program has been principally that of acquainting the leaders with the needs and opportunities of soil and water conservation and encouraging leaders and groups to act together on this problem as they have on others through the years.

In the past 4 years, this method of approach in the Santa Fe work group has saved a vast amount of time, transportation, and administrative cost. To 10 such group meetings held in 1948 can be credited at least 50 percent savings in planning time of technicians. The method is equally advantageous to farmers, for the thinking of a group often helps to speed up understanding of conservation and to determine the best methods for getting a job done.

Group action has made it possible to write more farm plans. A corresponding increase in the application of recommended measures has been evident, as contrasted to the previous single-shot approach. Furthermore, cooperative action between the farmers in these districts has helped make available the needed modern equipment which previously had been beyond reach.

There is no substitute, of course, for a certain number of individual contacts. Among the many aspects of the program that can be handled on a group basis, however, are these: Information as to methods of making applications for farm plans, preplanning discussions, planning of general practices, follow-up jobs such as crop rotations, land leveling irrigation and ditch improvements, and planning the over-all use of technical personnel and equipment.

About half of the group-action meetings have been planned ahead of time with the local leaders, and specific program and recommendations have been worked out in advance for group consideration. In addition, there have been many get-togethers around an SCS pick-up in the field, in the general merchandise store, around a new piece of equipment working in the community, or after meetings of the boards of supervisors.

There is still room for improvement in ways to speed up the program. But district supervisors in this area are sold on group action as a means of getting a big job done faster without having to add to the technical staffs serving the districts.

—GLENN M. BURROWS

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**WATER PUTS THE WEIGHT ON.**—The proper location of eight new stock-water reservoirs on his range near Pueblo, Colo., has resulted in an increase in his weaner calf weights from 369 pounds in 1946 to 416 pounds in 1948, declares Frank Zavislan.

When Zavislan bought his ranch several years ago, he found that his livestock had to travel as much as 2



to 3 miles to reach water. He became a cooperator of the Turkey Creek Soil Conservation District. His ranch program included construction of eight additional stock-water reservoirs to provide for better distribution of grazing.

In the fall of 1946, before the reservoirs were built, Zavislan sold weaner calves at an average weight of 369 pounds. Some were held over and were sold as yearlings in 1947 with an average weight of 635 pounds. Only three of the reservoirs were completed in 1947. However, the weaners averaged 395 pounds at the time of sale, and again some were held over and sold as yearlings averaging 724 pounds in the fall of 1948.

In the fall of 1948, this rancher's weaning steers averaged 448 pounds and his heifers averaged 407 pounds, or a general average of about 416 pounds. This was an average increase of 147 pounds between 1946 and 1948. The increase for 1948 alone almost pays the entire cost of building the reservoirs.

A diversion structure which was built to provide protection to his homestead and farm land already has saved him several hundred dollars. "Last summer we had what old-timers called the hardest rain in 40 years," the rancher states. "This diversion worked perfectly, otherwise I would have had a heavy repair bill."

**SCHOLARSHIP OFFERED.**—Senior students of six Utah high schools—Bear River, Box Elder, Logan, North Cache, Preston, and South Cache are eligible to compete for an annual \$250 scholarship at Utah State Agricultural College to be awarded by the Peterson Tractor Service of Logan, Tremonton, and Preston.

One scholarship will be awarded each year to the winner of a soil and water conservation contest.

The contest consists of two parts: First, a written analysis of the soil and water conservation problems of a designated farm to be approved by the judges; second, a written, detailed plan of work specifying the practices the contestant would recommend to the farmer or would consider desirable and feasible if he owned the farm.

Three judges will be appointed by the supervisors of the Northern Utah Soil Conservation District. Entries must be submitted by May 1, 1949 to the high school, 4-H Club leader, or SCS office.

**COTTON YIELD HIKED.**—"Construction of a diversion channel and dike above one of my cotton fields saved at least a quarter of a bale of cotton to the acre in 1948," declares Howard Sexton, who operates a 175-acre farm near Duncan, Ariz. "During summers when we have normal rainfall and runoff, I figure that this dike could save the entire cotton crop on about 50 acres."

Howard and his brother, Doyle, World War II veterans, asked assistance of the Duncan Valley Soil Conservation District in applying a conservation program on their farm in 1943. When they returned to their farm, after discharge from the army, they set about getting soil and water conservation practices on their land.

One of their most difficult problems was how to prevent runoff water from nearby denuded range land from cutting across some of their best cotton land. During the summer rains runoff water usually cut across two fields, filled up irrigation furrows and head ditches, and often washed out the crop. If the runoff came in late summer, when the cotton was high, it was impossible for the Sextons to get back into the fields to refurrow. This meant no more irrigations and a resulting heavy loss in production. When the runoff came in early summer, crops on two fields often were washed out.

The brothers were helpless to control the silt-laden water rushing down on their farm, since the source was on range land up the slope. They figured that their only recourse was to divert the water when it reached their land.

SCS engineers working with the district staked a diversion channel and dike 3,660 feet long. This was designed to collect the runoff water and divert it into an adjacent wash. The channel was planned on a gradient designed to carry 75 second-feet of water, the maximum expected from the drainage area above the Sexton farm.

The brothers employed a private operator to do the dirt moving and the job was completed about a week before the first rain came last summer. The channel and dike functioned perfectly.

The construction cost \$516, but the Sextons say that the work already has more than paid for itself. Last year they got two bales of cotton to the acre from one of the fields that had been damaged by runoff in the past and the other produced a bale to the acre.

**OF ALL THINGS!**—It's "Operation Bugseed" on the 84,000-acre Horace Pyle ranch in the Canaan River Soil Conservation District, Quay County, in eastern New Mexico.

In addition to proper range management, technicians have recommended the stabilization of about 2,500 acres of sand dunes on the ranch. The first step calls for the use of bugseed weeds in establishing a temporary cover on the dunes.

Wayne H. Miles, of SCS, says that bugseed weed is an annual low-growing plant which has been found very effective in the difficult operation of establishing a cover on blowing sandy areas.

Several hundred pounds of the weed seed already have been collected in the area. During the winter two dunes, one of 600 acres and another of 160 acres, will be fenced to exclude livestock. Bugseed weeds will be planted next spring. After the weeds become established to provide temporary protective cover, adapted grasses will be seeded for permanent cover. A tree windbreak will also be planted as an additional barrier against strong winds.

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## PACIFIC

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**BRINGING UP FATHER.**—The North Palouse Soil Conservation District in eastern Washington has an uncanny knack for thinking up unusual ideas. Last spring the district sponsored a soil conservation jingle contest among grade school youngsters of Palouse and nearby Garfield. Winning jingles were posted on roadside signs similar to those used to advertise a popular shaving cream. (See SOIL CONSERVATION Magazine for December 1948.)

Now the district has come up with an equally clever idea for keeping the kids interested in soil conservation. It is a call for help in preparing an A-B-C book on conservation.

The project was announced in a brightly colored brochure prepared much in the manner of a standard A-B-C book. The supervisors started by asking the question, "Can you think of a better way to tell the grown-ups about soil and water conservation? Who has to read A-B-C books? Not the little children. It's their parents or older brothers and sisters who have to read them. And some parents are getting mighty tired of reading "A is for apple" after all these years. Why not work up an A-B-C book that is different? Many city people grow up without ever seeing cows or sheep or other farm animals and they don't know anything about soil conservation. Why not tell these people about conservation with an A-B-C book. They are in every home in the country that has children."

The district announcements went on to explain that they wanted the youngsters to work up ideas for individual letters of the alphabet stressing the conservation theme and promised to try to get the finished book published if it turned out well.



**T**HIS tree planter is at work on the plantation of R. P. Thomas, supervisor, Saline Soil Conservation District, Gibsland, La. The planter is owned by the district and leased to farmers at 50 cents per thousand trees. Designed for efficient operation in all types of soil, this machine will plant up to 10,000 trees per day and is ideal for reforestation projects. A coulter wheel cuts through sod and slices roots. Behind coulter, a lister-type plow opens cut without casting the soil to allow operator to spot seedlings at correct depth and spacing. Furrow is closed by compaction wheels which trail behind plow. Readily handled by a tractor of 30 horsepower or more. (Photo by Hermann Postlethwaite.)







*May*  
1949

# ≡ SOIL CONSERVATION ≡

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UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.



# SOIL CONSERVATION.

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**CHARLES F. BRANNAN**  
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CHIEF, SOILS CONSERVATION SERVICE

ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE  
WASHINGTON, D. C.

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## WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

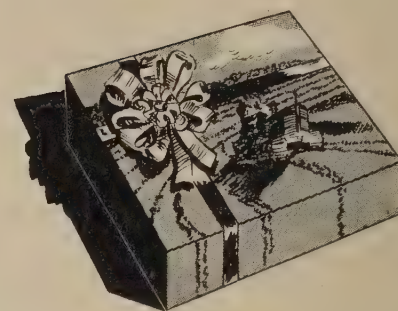
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**GIVES FARM TO STATE.**—A modern soil conservation farm will be developed on 275 acres given to the State of Maryland by Miss Emma T. Strider, daughter of the late Luke C. Strider who was a municipal court judge in the District of Columbia. The farm is located at Cloppers on the Seneca River in Montgomery County.

Administration will be through the State Game and Inland Fish Commission, of which Malcolm King is the field superintendent in the Montgomery area. He says 35 acres will be set aside for use of the Rockville Chapter, Izaak Walton League, and the remainder will be developed "as a model farm displaying all conservation techniques, with emphasis on wildlife conservation." In Maryland there is excellent cooperation between the soil conservation districts, SCS technicians, and the Commission.

In presenting the farm to the State, Miss Strider said: "I believe we should all do what we can to advance conservation teachings and keep this country from becoming poor through physical deterioration of the land."



**FRONT COVER.**—Row grade lay-out of tobacco field on farm of M. P. Ewards, Sr., Kittrell, N. C. Ewards had read about this conservation method, had seen it at research station demonstrations, and then came home and tried it out in his own field. Photo by Hermann Postlethwaite.

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Dave Rice (left), SCS employee at Chadron, Nebr., checks map with pilot of hay-lift plane prior to take-off on distributing flight. Dave went along on such flights to spot ranch and its livestock before dropping feed.

## OPERATION SNOW-BOUND—By R. W. ROGERS

**W**HEN the snow blizzards hit the Midwest with all their fury in the winter of 1948-49, the Soil Conservation Service was there. Stranded communities, marooned families, and perishing livestock were in urgent need of help. Immediately the local knowledge of Service employees, together with aerial maps, trucks, tractors, and bulldozers, was provided. The offices of many soil conservation districts were used as emergency headquarters for relief activities.

NOTE.—The author is chief, records and reports division, Soil Conservation Service, Washington, D. C.

Now that the sun has shone for a few weeks, and as the melting ice and snow moves downstream, a part of the story can be told. Other parts would be the human suffering, heroic deeds of mercy, and extreme losses of cattle, topsoil, and water that resulted from the snowstorms.

Early in November 1948 a blanket of snow covered the Black Hills of South Dakota. On November 17, McCook, Nebr., was snowed in. The following day high winds blew the storm (and drifting tumbling weed) as far east as Omaha. Parts of the Great Plains, including Kansas, Ne-



braska, Colorado, Wyoming, Montana, North and South Dakota were covered with ice and snow.

Cattle were caught in the fields, and sheep on the ranges. Cars slipped off the road and travelers were stranded. Train schedules were interrupted as telephone lines and poles went down and railroad switches stuck. Old-time residents were caught with low supplies of food and fuel. They called it a "whizzer," a "northwester," a forerunner of things to come.

During the winter, zero temperatures were recorded in Houston, Tex. It snowed in Tucson, Ariz., and in southern California. The Columbia River basin faced another emergency following the floods of 1948.

On January 2, 3, and 4 snowdrifts up to 8 feet high were piled in the streets of Douglas, Wyo. Don Davis, district conservationist, took hold of things and helped to get an emergency relief set-up going. Davis reports: "We drew up an announcement, which was broadcast over the Casper station, asking that all calls for relief be funneled through an emergency relief committee. We contacted the National Guard, truckers, and heavy equipment owners in the area and secured an agreement to pool their equipment. The county commissioners set up the emergency committee. Later the Red Cross and the Army Engineers were added."

Davis reports: "The first day we plowed out around the two feed stores and three storage houses in Douglas to open up stored feed to ranchers. We then went out the Gillette Highway for 3 miles and opened up some drifts that were blocking a convoy trying to get out that road." Davis made three distress runs into the country north of Bill to contact people needing food and medicine.

"Sims and Schlichting operated the RD-4 dozer-tractor, loaned by the Soil Conservation Service, for 80 hours when temperatures stayed below zero. This machine opened about 40 miles of road at this time and got feed to approximately 2,400 head of cattle."

Working day and night this crew of Davis, Sims, and Schlichting stayed on the job. Using additional equipment they opened up other roads, lanes, and haystacks along the way to snow-bound ranches. Dead cattle were found around each stack. Others were badly in need of water since watering holes were frozen to the bottom. Many of the cattle were on the verge of starvation and later died.

Then came the winds up to 70 miles an hour which blew the snow off the ridges and chewed up the soil. Whole bands of sheep, numbering in the thousands, blew under. About half of them were later dug out. Four antelope that had been blown under were found still alive. Others were found dead.

At Casper, Wyo., Robert F. Corbet, SCS work unit conservationist, acted as spotter during the hay-lift operations, making three missions a day. Use of SCS aerial photos and knowledge of the country made it possible to pick out ownerships and stranded cattle from the air for dropping feed.

Soil Conservation Service maps in nearly all areas were made available for spotting ranches, locating roads, and assisting in the relief program. SCS people rode in hay-lift planes and assisted in spotting ranches and livestock herds. They rode



Pheasants got a lot of protection from fence rows and tree plantings and may have fared better than at first supposed. The SCS man who made this picture reports that 12 to 15 pheasants flew from this spot before he could get his camera ready. In and around Chadron, Whitney, and Gordon, Nebr., he saw 175 pheasants and 35 to 40 grouse flushed from bushy and weedy spots along fence lines. At least 50 pheasants flew from a shelterbelt near Gordon, and farmstead windbreaks sheltered some birds.





Sheep at haystack after bulldozer opened road leading to it. They had been without hay several days.

weasels as pilots and assisted in locating farmers and ranchers in need. All such facilities were made available to the Fifth Army during their operations.

Dave Rice, SCS employee at Chadron, Nebr., rode in planes to guide pilots to snow-bound ranches and their livestock. He also provided maps of single farms to show other pilots where to drop their loads of feed.

On January 27, as reported by the *Bismarck Tribune*, two locomotives and a freight train were rescued by a tractor and bulldozer owned by the Renville County (N. Dak.) Soil Conservation District when they stalled in snow drifts between Mohall and Sherwood. After the bulldozer had broken loose, one car at a time, it was found that the engines were dangerously low on water after their long fight at 26° below zero. Technicians of the Soil Conservation Service had supervised construction of a farm irrigation reservoir located nearby and close to the tracks. Some of the impounded water was used to raise the water level in the engines. Soon steam was up and the locomotives were on the move.

Leonard B. Woods, county clerk at Ord, Nebr., wrote Jack Laggee, assistant State conservationist, Lincoln, Nebr., "I wish to express to you, on behalf of the board of supervisors and the people of Valley County, their sincere thanks for the work of the personnel of the Soil Conservation Service in this county during the emergency created by the storms of this winter." SCS employees, Wallace Doe, Louis E. "Sac" Walford, Leslie Nash, and John Vanberg, were mentioned for their aid to distressed farmers. C. C. Dale, county extension agent, reports that these men "have gone far beyond the call of duty in helping distressed people of Valley County."



This is how the snow piled in around farm buildings and made it impossible for the rancher to move feed or livestock; Frank Arner farm near Crawford, Nebr.

In addition to these examples of missions of mercy, there are hundreds of others within the snow-clad region.

A. E. McClymonds, regional conservator at Lincoln, Nebr., reports: "There are about 100 soil conservation districts in the Great Plains regions within the emergency blizzard area. Some 250 Soil Conservation Service employees were alerted and assisted the Army and other emergency agencies on relief activities. About 200 SCS trucks were available in this area for such work. All heavy equipment owned by the Service, and on loan to soil conservation districts within the area, was turned over for opening highways and farm roads and making trails to hay and livestock."



Several reports state that the greatest loss has not been in actual dead livestock but in condition of the stock. Cattle are in very poor condition and calving time is approaching. Cattle are starting to drop their calves prematurely already and sheep are doing the same. With heavy spring storms, the loss is likely to be much greater than at the present time.

Colorado reports that about the northern third of the State was affected by the blizzard and drifting snow. Utah reports that practically all of the State was involved, particularly the western third. In both States, SCS personnel and equipment were made available.

Some other cases of service rendered beyond the call of duty are as follows:

Haley Houghton, work unit conservationist at Ely, Nev., received a letter of commendation from Lt. Col. Martin W. Sullivan, Sixth Army Headquarters. It said, in part; "I wish to thank you for the assistance given us in accomplishment of our mission in Operation Snow. Upon arrival of the advance party you assumed the initiative in obtaining and preparing facilities for the billeting of troops. You continued to give freely of your time day and night to make this operation a success."

In the Tri-County Soil Conservation District in South Dakota, two SCS pick-up trucks followed the tractors. They were loaded with fuel oil, gasoline, and groceries to give immediate relief as soon as trails were opened to ranches. It was found that in many cases the rancher had used all the gasoline out of his automobile, truck, and tractor to keep his water pump going and had none to drive to town after the road was opened.

J. R. Stephens, work unit conservationist of the Cloud's Peak Soil Conservation District near Sheridan, Wyo., carried a box of food cross country three-fourths of a mile to a snow-bound farmer. He also helped break trail to a stranded farmer's house and helped free a number of farmers' cars from drifts.

Most supervisors in the stricken area were snow-bound along with the other farmers and ranchers, but those who were able to assist did their best. One, Charles E. Wilson of the Pennington Soil Conservation District in South Dakota, has a light plane. Even though he lives more than 50 miles from Rapid City, he put in many hours flying groceries, medicine, and other necessities to



**Purebred Hereford yearling calves frozen in the February blizzard in Dawes County, Nebr.**



**Sugarloaf Soil Conservation District equipment breaking through drift on farm near Crawford, Nebr.**

residents throughout the area. He also brought a woman who had broken her arm to a doctor, and hauled repair parts to a tractor used to open roads.

Chadron, Nebr., was near the center of the snow blitz. Dave Rice and other members of the SCS staff, as well as SCS workers at Mirage Flats, were in the middle of Operation Snow-Bound. Rice reports that various organizations really "pitched in" and worked together.

Food packed in boxes and fuel oil in 5-gallon aviation cans were dropped by local pilots using small planes. Locally made toboggan sleds capable of carrying 1,000 pounds of food and supplies were tied behind weasels. These crews and local guides saved the lives of many people in the storm area. One old man who lived alone shot his sheep dog in order to make his food last longer.

Rice reports that "only a small percentage of the pheasants have survived. Wild deer yarded-up in the pines during the storms. Feed was scarce, losses undetermined."



John Mader, conservation aid at Crawford, Nebr., spent nearly 3 days in 10° below zero getting a tractor started. The situation was so serious that he then operated the tractor and bulldozer continuously for 36 hours without any relief help to liberate isolated ranchers and livestock.

George D. Clyde, chief, SCS Division of Irrigation Research, reports: "Unprecedented winter storms have resulted in very heavy mountain snow cover in most parts of the West. This is giving great public concern to later possibility of damaging floods from snow-melt."

R. A. Work advises that in his judgment "damaging snow floods are possible in many basins and particularly in Oregon, Washington, Idaho, and Montana. The main condition for floods, namely, heavy accumulation of mountain snow, now exist."

The Corps of Army Engineers is deeply concerned about the unusually deep snow cover on headwaters of the Willamette River in Oregon. They have requested the Service to conduct snow surveys every 2 weeks on seven key snow courses in this basin until the flood hazard has been realized or dissipated. The Army agrees, in this case of many requests, to meet the field cost of the emergency surveys.

"Dean" Clyde also reports that "flood hazards are in the making in the Columbia Basin, Missouri River, Colorado River, Rio Grande, and other Great Basin streams, because of clogged channels, encroachment of users on the flood plain, and the unusually heavy snow." He provided a table showing comparison of snow cover with that of previous years.

*Comparison of snow cover with that of previous years*

Tributary basins	Jan. 1, 1949, water content		
	Percent of 1948	Percent of 1947	Percent of average
Upper Clark Fork River, Montana.....	78	73	134
Flathead River, Montana.....	206	66	143
Pend Orielle River, Idaho.....	286	210	240
Wenatchee River, Washington.....	226	159	221
Yakima River, Washington.....	848	297	317
Upper Snake River, Wyoming.....	187	138	163
Big Wood River, Idaho.....	392	96	209
Boise River, Idaho.....	165	114	153
Payette River, Idaho.....	170	118	155
Malheur River, Oregon.....	178	179	207
Salmon River, Idaho.....	199	132	172
Deschutes River, Oregon.....	287	275	228
Willamette River, Oregon.....	252	317	357
Logan River, Utah.....	214	148	187
American Fork River, Utah.....	153	65	186
Strawberry Reservoir, Utah.....	264	163	195

With nearly double the usual amount of water stored as snow on the watersheds there must be increased runoff this spring.

The possibility of high waters and flooding conditions this spring reminds us of the Ohio-Mississippi floods of 1937. The Soil Conservation Service was there, too, helping the Army engineers and others in raising levees, building higher sea walls and removing families from floating house-tops. For example:

At Hickman, Ky., the Service was called on to help raise the sea wall about 4 feet to save the town. CCC enrollees, SCS trucks, lumber and other materials were brought in to sandbag the concrete wall and hold the river back. At Bessie Bend on the mighty Mississippi, SCS workers labored in mud and water to prevent the rising waters from destroying the high earth levees and cutting a new channel. Day and night the work went on until the "big bend" was safe for continued navigation. And when Reelfoot Lake in Tennessee was about to go down the river, a fleet of SCS trucks with bumpers touching formed an endless convoy to sandbag the road and bridge above high waters.

Many other examples of intensive work by the Soil Conservation Service during the 1937 flood and other emergencies could be mentioned. The more recent one was along the Columbia River in the spring of 1948.

Some may ask: What does all the snow, ice, and floods have to do with soil conservation?

Surely no one can do anything about the weather, but larger quantities of water can be stored on the upper watersheds where it falls. By soil conservation treatment of each acre according to its needs, the soil itself becomes the greatest reservoir.

Terraces, contour farming, and stubble mulching reduce the rate of runoff and soak more water into the soil. Farm ponds and detention reservoirs in large numbers can hold back much of the runoff as storage for later use on the farm. Trees and grass on steep lands and legumes in crop rotations form a protective layer as a sponge to soak up much of the water.

So when the ice and snow have melted and the high waters (or floods) have passed on to sea, the Soil Conservation Service will still be at work with its regular job, that of helping more farmers and more ranchers to get better land use and to apply the needed practices to their lands.



# districts need grass seed now



## SEE FOR YOURSELF

Left, top.—A good deal of grass seed is needed for planting on earthen dams. This one, in Nebraska, is well protected. Fenced out, it is a good wildlife area.

Left, bottom.—This waterway was once a gully. It was shaped with heavy equipment and then seeded to a grass-legume mixture.

Right, top.—Wind-eroded abandoned farmland in North Dakota.

Right, next to top.—Same land after grass had become established. Now devoted to pasture or hay production.

Right, next to bottom.—Ree wheatgrass seed plot on Frank Feser farm near Claremont, S. Dak. Feser is president of the South Dakota Association of Soil Conservation District Supervisors.

Right, bottom.—This roadside was shaped, then seeded to brome grass. It prevents water from cutting a ditch such as those common along the Nation's roads. It also keeps out weed infestation. Farmers help maintenance by cutting for hay. Millions of pounds of grass seed are needed for roadside erosion control.



**M**ANY FARMERS in the United States are worried over the possibilities of surpluses, now that Europe and Asia are showing signs of recovery.

The soil conservationist, however, has another worry. He welcomes some easing up of the pressure on American land. This will permit the farmer to return some land to grass permanently or for long periods. It will also permit him to use grass in his crop rotation so that his good land can be given the periodic rests it needs and tend to restore the organic content.

But where to get grass seed? Surveys by the Soil Conservation Service reveal that today there are some 150 million acres of land in the United States that should be seeded to grass. This will require about 2½ billion pounds of seed.

Even now, in the Great Plains region alone, there is a shortage of grass seed. Farmers and ranchers in soil conservation districts in this area are planting more than half a million acres of grass a year, mostly as part of the crop rotation. And the evidence is that much more would be seeded if there were enough of the right kinds of grass seed available.

Much of the need is for reseeding native pastures and range and for grassing range land that has been cleared of sagebrush and other brushy plants. A lot is needed of species that will furnish early spring and late fall grazing and fit into the farm or ranch production plan. Some is needed to take the place of native grasses where erosion has changed the environment enough that native grasses won't grow there now. And some is needed for special erosion-control jobs, such as in waterways, to protect irrigation and drainage ditch banks, and control dune sand.

There is not enough seed of any of the grasses under production—and seed production hasn't yet started on some species. Farmers and ranchers must be encouraged to grow the necessary adapted grass seed.

Getting the seed of any grass into production is at best a relatively long process. It involves extensive testing and the development of a seed source. In this, the forage crops division of the Bureau of Plant Industry, Soils and Agricultural Engineering, the State experiment stations, the Soil Conservation Service nurseries, and the soil

conservation districts are cooperating, each in its own field.

The research agencies are constantly on the lookout for plants with better forage qualities, higher yields, resistance to disease, good seed and seedling characteristics. Sometimes they are planted new to this country; at other times they are improved strains of presently common grasses. The plants are tested under controlled conditions in greenhouse, laboratory, or field and are the subject of detailed readings and accurate evaluations.

The observational nurserymen of the Soil Conservation Service aid in evaluating grasses for their ability to do specific conservation jobs. Among these are the ability to grow on less fertile, eroded soils; to thrive on sandy, saline, or seepy sites; and to give adequate protection quickly to newly seeded waterways.

In the initial testing, the facilities of all three agencies are used. But for widespread testing, the State experiment substations and soil conservation districts come into the picture, for it is in the field that the worth of a grass is finally proved. Once proved, seed is released by the State experiment stations through crop improvement associations.

Progress by research agencies and SCS nurseries in searching out, testing, and producing the initial seed sources for new grasses has been good. Three examples in the northern Great Plains will suffice. Mandan wild-rye was developed from a selection of superior plants of Canada wild-rye on the upland near Mandan, N. Dak. Green Stipa grass was selected in the same way. Intermediate wheatgrass is an import that got its start at the South Dakota experiment station when W. W. Austin of the Soil Conservation Service brought in a hatful of seed.

But progress in encouraging farmers and ranchers to produce the seed on a large scale is not satisfactory. Thus far it has been impossible to assign to the field the number of scientists needed to give farmers enough technical help in understanding the new grasses, and in planting and growing them and harvesting the seed.

The story surrounding crested wheatgrass is a good example of what happens when seed production of a grass is allowed to grow like Topsy. Crested wheatgrass had been introduced into the United States just before 1900 by Dr. N. E. Hansen. Most of the experimentation with it was

NOTE.—The author is chief, regional nurseries division, Soil Conservation Service, Lincoln, Nebr.





**Farm equipment may be used to harvest most grass seed. Sometimes adjustments are needed. This combine is used to harvest buffalo grass seed. It has been altered by adding brushes to the reel and lowering the cutter bar.**

done by J. T. Sarvis at the northern Great Plains station at Mandan.

It was not until 1929—30 years later—that crested wheatgrass was listed in a commercial seed catalog; this in spite of the fact that its life history had been worked out in detail by 1915, and that Sarvis at Mandan and Leroy Moomaw at Dickinson, N. Dak., demonstrated the practicability of growing the seed economically and in large quantity. Farmers and ranchers had been denied the use of this grass for many years.

That this process can be speeded up materially has already been shown in the case of intermediate wheatgrass. It is only 10 years since Austin brought in his first hatful of seed to the South Dakota experiment station. It was seeded in rows and the first few seed crops were used for plot testing and increase.

Once the value of this species was shown to the farmers and ranchers, the SCS nurseries increased their intermediate wheatgrass acreage. Between 1943 and 1947 they produced 21,673 pounds of seed which was distributed to soil conservation districts and crop improvement associations. Much was

furnished farmers for seed production to supply local needs for conservation and general farm use.

It is estimated that growers produced a million pounds of intermediate wheatgrass seed in 1948. Thus, with soil conservation district supervisors, county agents, Soil Conservation Service technicians, and research workers pulling together, the foundation of a good seed supply for this grass has been established in a decade.

Spreading of the knowledge of how to produce seed was an important factor in getting this species into so wide use in so short a time. It was the combined effects of the county agent's knowledge of the farmers to be selected for the seeding of the first small lots received, the district supervisors' help in encouraging farmers to produce seed, and the aid to farmers of SCS technicians and county agents in setting drills, caring for the seeding, and harvesting the crop.

With further teamwork, the production of other grasses can be speeded up as much or even more.

Here's what goes into the job of producing seed. First, it takes good land to produce quality seed. It takes harvesting and cleaning equipment. And, above all, it takes folks with an interest in seed production and a knack for it. The county agent and SCS technicians are the key people in getting seed production started right. They know the farmers, their equipment, their land, and their abilities. And they must help the man selected through his first year's effort at producing the seed.

There can't be mistakes. The small sack of prize seed that is received is a rare item—some thing that can't be bought; this sack, and a few others like it sent to other communities, is the entire supply. It must be put in the hands of someone who will respect it for what it is and do well with it.

The grass seeding job ahead is huge, as already has been pointed out. There isn't enough seed to meet demands even now; what will the situation be when farmers and ranchers decide to turn to grass seeding seriously? And there still is little production of the seed of some new grasses that are needed for special conservation jobs.

Since it takes time to get grass-seed production going, district supervisors, SCS technicians, county agents, and research workers need to get busy on the job of encouraging the production of the right kinds of grass seed. It's a challenge.



# GROUP ACTION

By PAUL H. WALSER



SOIL conservation districts organized under provisions of State laws enacted in each of the 48 States have given the American people their first definite assurance that the deterioration and destruction of our land by erosion is going to be fought and eventually checked. Until the districts came into being there had been no thorough study of the local aspects of the erosion problem, no definite provision for necessary local leadership, and no medium for concerted progressive action toward conservation. The greatest progress in conservation that has ever been made has taken place in the years since 1937 when the first soil conservation district was organized. Up to the present time, approximately 2,000 districts have been organized in the United States. To be sure, not all of the land of the United States is in soil conservation districts and only a fraction of the land in soil conservation districts has received conservation treatment, but a sound beginning has been made and there has been sufficient progress to assure that the district movement is well-founded and that its objectives can be attained.

The oldest district has been in operation only 10 years. Dozens of others are just now getting under way. Enough experience has accrued, however, to enable district supervisors and their co-workers to take stock of the situation, evaluating strong points, and seeking out organizational or operational phases which should be strengthened and further developed in order that the districts may function most efficiently.

Numerous basic strong points have been demonstrated by the districts. One of these fundamentally important points is the placement of responsibility for the district conservation program in the hands of local people themselves, subject to no other agency, but only to the people of the

district and the State legislature which enacted their enabling law. In most States, boards of supervisors or directors elected by their neighbors constitute the governing bodies. These individuals have responsibility for formulating and directing the conservation programs of the districts. This placement of local leadership is in keeping with the best American traditions of democracy.

A second source of strength lies in the fact that in soil conservation districts, as in no other widespread organization, there has been thorough study of the problems which have contributed to present land conditions and, based on those studies, careful planning of an attack. In other words, there has been study both of cause and of effect, with the conclusion that the land is suffering from many contributory influences and not merely happenstance. As an example of the findings of such studies, the farmers and ranchers in one soil conservation district considered that their major, and possibly their sole problem, was drainage until they undertook the studies leading to the building of their district program and work plan. When they completed these studies, they listed almost 100 contributory problems, a number of which would have to be solved before they could arrive at their primary objective, that of improving the use of the land by drainage. There is a greater and more accurate knowledge of our land problems today than ever before because of the studies which have been made in soil conservation districts. Since knowledge must precede sound planning, and sound planning must precede operations in the field, it becomes very apparent that soil conservation districts have made a highly valuable contribution to the Nation through preparing to meet their conservation problems.

A third point of strength lies in the fact that districts recognize and use the fundamental principle of cooperation. They work together to solve

NOTE.—The author is state conservationist, Soil Conservation Service, Temple, Tex.





**Group action speeds results on these small, centuries-old Spanish-American farms in northern New Mexico.**

common problems that are too formidable for any individual to tackle single-handed. Districts recognize the obvious fact that erosion, whether from wind or water, does not stop at fence lines or even county or State lines, and that if it is to be controlled economically, quickly, and permanently, people must work together. As yet no one can estimate the ultimate value to agriculture of the lessons on cooperation learned in soil conservation districts.

The most accurate information available indicates that two extremely important and conflicting trends are operating in this country. One is the increase of pressure on the land brought about by the food and fiber demands of a growing population, the greater need for agricultural products in manufacturing and industry, and the findings of science that products of agriculture can be substituted for certain metals and other materials once plentiful but now becoming scarce. The second trend is the decreasing supply of land to fulfill the needs of man. With the amount of land in the United States now only a little more than adequate to meet our needs, we continue to lose our productive soils at the rate of about half a million acres per year. In view of these trends, it is clear that we have left only a few years of grace before we, in common with other peoples, will feel the

pinch. Our only salvation is to conserve our vital resources of soil and water. As rapidly and as effectively as conservation work has been and is being done in soil conservation districts, it must be done yet more rapidly and yet more effectively.

Let us look at some of the facts in one-two-three order.

First, soil conservation is not merely a desirable objective of the distant future—it is an immediate and crying necessity. The consequences of failure to conserve soil and water in the past should leave no doubt in our minds about the vital urgency of using land only according to its capabilities and treating it according to its needs henceforth. It must be recognized that improvements in machinery will give us more efficient implements, that plant breeding will continue to give us better producing strains, and that other sciences will make their contributions to increasing yields. Yet, the fact must not be overlooked that these technical advances can be only temporary unless the basic soil and water is conserved. This is simply self-preservation.

Second, even in their short lifetime soil conservation districts have demonstrated their practicability as organizations for securing the cooperative action necessary to accomplish soil and water conservation. With little or no precedent on which



to base their actions, district supervisors have already solved many administrative problems and demonstrated their ability to provide adequate local leadership for carrying out their great undertaking. It is only reasonable to expect them to make further and greater progress and that their districts should consolidate as permanent working parts of smoothly operating national machinery for conservation. If soil conservation districts are to endure, then also is the responsibility of soil conservation district supervisors through all the steps toward the conservation goal.

A third fact is that there are four steps in the job, all of which must be taken progressively. The first of these steps is that of making the essential surveys or inventories, and their use in conservation planning by farmer or rancher and assisting technician. A perfect conservation plan, however, is valueless until it is applied on the land. After it is applied, its value is minimized unless it is adequately maintained year after year. From the improvements in conservation techniques which have been developed within the past decade we are confident that improvements will continue to be developed. Therefore, if we are to make sound over-all plans, we must think not only in terms of planning, application, and maintenance but also in reference to the widespread adoption and application of improvements which will come later. If all of these steps are to be achieved and conservation is to become permanent and progressive, a better and more rapid means must be devised than is now available.

Fourth, some soil conservation districts now have up into the thousands of cooperative agreements already entered into, yet not all of the land

units of the district have been reached even with surveys and planning. The load of responsibility for giving assistance continues to increase without a commensurate increase in the facilities for extending such assistance. To put it another way, the number of district supervisors has not increased per district and likewise the number of agency representatives helping the district has in many instances decreased rather than grown. Certainly, the number of SCS technicians assigned to districts has not increased to the extent that they can keep up on an individual single-shot service basis with new requests for planning, and also give essential lay-out assistance on application and the help necessary on maintenance and improvement. Even in districts having only a few hundred cooperative agreements it is already obvious that greater efficiency in rendering service to cooperators must be achieved if obligations are to be fulfilled and conservation made permanent. Ways and means must be devised whereby supervisors and technicians can reach more people more rapidly with effective assistance through all of the necessary stages.

So far, the greater part of the assistance has been on an individual basis. A farmer has made application to the district supervisors for assistance and technicians have been assigned to help out. What the district has to offer, what it expects of a cooperator, the advantage of conservation, land use capabilities, planning procedures and all the other steps involved are explained individually to the farmer—frequently involving the use of much of the technician's time over and above the time actually required in working on a plan. After the plan is completed, individual arrangements have to be made with the farmer to assist him in the various steps of application. Many farmers have completed application of their conservation plans but, in the rush of assisting new cooperators, contact with them on essential maintenance and improvement has been lost.

How, then, can conservation be speeded up and made more effective? More trained technical personnel is one obvious answer, emphasized by most boards of supervisors in their 1947 annual reports. More conservation equipment and materials of types new or uncommon to the district is another need stated by the governing bodies. Financing is mentioned by numerous boards. Certainly, these are recognized needs, but within themselves they do not solve the problem of getting conservation



Planning time may be cut in half when natural groups function together.



on all the lands of all the farmers in the districts. Something else is required.

In every neighborhood or community there are groups of people who visit, enjoy recreation, and work together, bound by some tie such as relationship, religion, old-time customs, everyday needs, or just plain good-neighborliness. These common-interest groups vary in size from 4 to 5 families up to 15 or 20, or more. In each, there is a person whose counsel is generally sought and followed. An increasing number of governing bodies of districts are finding that it is a comparatively simple process to find the membership of these groups and locate their leaders. The next step is to sell the group leader on conservation, if he is not already sold. Once he is actively interested in conservation the group leader will interest his fellow members, call and act as chairman of planning and application meetings, request assistance for the group, route equipment, help in planning to meet seasonal needs, and in general move the program along.

Group action is not a new theory or even a new discovery. People who like to work together have been doing so from time immemorial. Certain human traits make certain people work together in groups most satisfactorily and most effectively. All that these progressive districts are doing is taking advantage of some known facts regarding human behavior and using them in the furtherance of conservation.

Group action is a natural projection of the soil conservation district philosophy. It calls upon and makes extensive use of local leadership. It brings out the initiative of the people themselves and it makes highest use of their instinct for helping each other to solve a common problem. Natural group leaders become right-hand men to district supervisors, not by official designation or title, but by unselfish work in assisting the district to reach more people rapidly and efficiently.

How much more efficient is group action, and how much time is saved by working with groups rather than with scattered individuals? That question cannot yet be answered with exactitude. Technicians now working with groups, however, say that by having an understanding of land capabilities and general techniques of planning and by being able to answer questions at planning meetings, the planning time required on farms of group members is reduced by one-fourth to one-third. In addition, there are economies of travel time.

Groups vary in their speed of application of conservation, as do individuals, but it is strongly evident that the morale-building and somewhat competitive effect of group enterprise does markedly increase the rate and quality of application. In one work unit, farmers working in groups planted more winter cover crops in 1947 than in all the five preceding years when they had been assisted as individuals. They also constructed more miles of terraces than had been planned for that year, thus reducing the backlog of work planned but not done. One group with 15 members held its first planning meeting in late May 1947 with 100 percent attendance. They called their second planning meeting in early June, with 14 members attending, one being ill. Thirteen made application to the soil conservation district for assistance and technicians worked with them in planning their farms. At the end of the first 6 months, 60 percent of their plans were applied, and by June 1948 the group averaged 90 percent completed application.

How to get the conservation program maintained after it has been applied on individual farms and ranches, and how to get it consistently improved, is a matter of concern to forward-looking district supervisors and their associates. Too often a sound conservation plan is applied; then, for one reason or another, failure to maintain it has resulted in loss of time and labor, and sometimes in actual damage to the land. Ten years of experience in districts indicates that governing bodies with their small assisting force of agency representatives will have to be continually on the alert for organizational efficiencies and newer and better methods if the district program is to be brought steadily and rapidly along to its fulfillment. Used skillfully, group action will go a long way toward solving the problem of increasing the number of farmers who can be assisted in planning by a technician, increasing speed and quality of application, making possible more efficient use of equipment, either contract or district owned, and then, in getting conservation maintained.

There are probably two major obstacles to the widespread use of group action in soil conservation districts. Both of them can be overcome. The first of these is that most agricultural workers are trained and accustomed to working with individuals. They know they can stay busy work-

*(Continued on page 235)*





Dairy barn and home of Warren Brockway, Milo, Maine.

## BROCKWAY LAYS A GREEN CARPET

By JOHN P. JONES and JOHN W. HART

ENTERING the New England Green Pasture Contest in the spring of 1948, Warren Brockway, Milo, Maine, rated seventh among about 1,900 who entered from New England. This achievement was not accomplished in a single season. Competition was keen. Only excellent pastures attained rank in the top 10. Warren has been working to develop and improve his pastures for several years. Management, fertilization practices, and selection of pasture species are factors in development of a productive pasture. The contest judges, all competent agronomists, rewarded Brockway for his progress in solving pasture problems. The same vigor, initiative, and good judgment that produced his successful pasture program are manifest in his other activities.

The town of Milo would not seem the same without Warren. For many years he has served on the board of selectmen and assessors. This is the body to which the town manager is responsible and which assesses the taxes. His judgment on public business is of the same high caliber as that exercised in his own affairs. For years he has expressed the desire to retire from town office, but each year nomination petitions in his behalf are circulated by interested taxpayers and he is re-elected. For several years he has been a member of the executive committee of the Farm Bureau, this being his second year as president.

Warren served in France during World War I and has continued to be active in affairs of the American Legion.

This ability in public affairs and his interest

in conservation as evidenced by the management of his own farm probably explain why Warren Brockway was elected supervisor to help direct the activities of the Piscataquis County Soil Conservation District. As a supervisor, he has definitely lived up to his reputation for sound thinking and wise counsel. He rarely misses a meeting or conference, and he always takes an active part.

Warren's farm is ideally adapted to livestock. A brook runs diagonally across, being fed by springs and seepage from the woodland. The surface is gently rolling. Part of it is deep and well drained, but because of the slope is Class II land. Aside from a few scattered areas of Class III land because of slope, the remainder is imperfectly drained and Class IV.

Before organization of a soil conservation district in 1944, Warren had worked out a plan of conservation farming in cooperation with the farm forestry program. A dairy farmer, he learned early that success depends (1) on having a large enough herd to give a large volume of business, and (2) on high quality forage. Of his 250 acres, 112 are devoted to hay and pasture and the balance is woodland. Warren farms to avoid using the plow and plans to break up his land only when it is necessary for reseeding.

Some of Brockway's land which has been seeded for 8 years is still highly productive, with no disappearance of the desirable species. His herd now consists of 52 milking cows and 25 young animals, and he produces abundant hay and pasture on the 112 acres to provide the roughage requirements. Raising no grain, this farmer recognizes the importance of making the best use of

NOTE.—The authors are chief, regional agronomy division, Soil Conservation Service, Upper Darby, Pa., and district conservationist, Soil Conservation Service, Dover-Foxcroft, Maine.



pastures. The high quality of the hay and pasture is indicated by the fact that he can maintain a high level of milk flow by feeding a 16-percent dairy ration at the rate of 1 pound per 4½ pounds of milk in the winter and 1 pound per 10 pounds of milk in the summer.

Hay and pasture are not considered separately but managed according to the needs of the particular season. Ladino clover at the rate of 1½ pounds per acre, and timothy at the rate of 7 pounds per acre, compose the seed mixture used. Warren likes this mixture because it can be used equally well for hay or pasture. He thinks in terms of grassland farming. Recently he became interested in using smooth brome grass with ladino clover. A given field may be cut for hay, or used to fill the silo, or employed as pasture. He also has a barn drier. This is used in connection with the silo, making it possible to take the gamble out of harvesting high quality hay. If the weather is favorable, he will use conventional methods of harvesting; if rain threatens, he will use the barn drier; but when the weather is damp, he fills the silo.

Warren is a firm believer in not grazing closely. While he rotates the grazing, he does not have small fields where the herd is likely to graze closely or tramp the pasture into the ground. The pastures are mowed as needed, and frequently the aftermath from grazing is made into hay or silage.

Warren makes no special effort to spread droppings. His experience shows that when the cows are on good pasture they spread their own droppings well. This, together with such spreading as is accomplished by mowing, keeps the pasture free from any of the bunches of uneaten herbage such as often accumulate in pastures not well managed.

As a conservationist, Warren knows that if land is expected to produce it must be properly treated. He uses the same high standards in treating his land as he does in feeding his cows.

Superphosphate is used in the gutters at the rate of 2 pounds per cow each day. The manure is stored in a concrete pit which is large enough to hold a year's accumulation and to allow for operation of a tractor manure loader. In the fall just before the ground freezes, and preferably while it is raining, the manure is spread on the grassland at the rate of 10 tons per acre. After the manure has been spread, the remainder of the

fields are top dressed with an application of 8-16-16 fertilizer at the rate of 500 to 700 pounds per acre.

The next season, manure spreading starts where it stopped the year before. As a result all the fields are top-dressed annually either with phosphated manure or a complete fertilizer. One ton of lime per acre is applied every 3 to 5 years.

In addition to his grassland program, Warren practices good management in his woodland. He has set out spruce and sugar-maple seedlings and is also taking steps to prevent the Pleasant River from cutting away more land.

Two years ago he purchased a nearby farm which had been idle 15 years. It was well covered with weed species or bushes. A conservation plan has been prepared for the new farm, and on those fields where the recommended practices have been applied he is getting production which compares very favorably with that of his home farm.

There are several sinkholes where the hardpan is near the surface. Some of these have already been filled by leveling operations, thus removing the obstruction to farm operation and increasing production. Diversion ditches have been built where necessary to prevent seepage from the woods into adjoining fields. As other trouble spots on wet areas are recognized, appropriate action is taken to correct them.

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## WORKING TOGETHER

By HUGH BENNETT

A GLITTERING array of model farms; conservation posters, essays, and scrapbooks; and drawings of other conservation items in a little country fair exhibit hall brought home again late last summer the fact that the real story behind great State and National feats is to be found in the individual communities of the Nation.

This happened at Parker, S. Dak., where I was privileged to present awards to rural schools in Turner County for accomplishments in the Young Citizens' League Conservation Education Project. Supervisors of the Turner County Soil Conservation District had contributed cash awards for the best scrapbooks, essays, posters, and projects on



conservation, and a plaque for the school with the best project. Although small-grain harvest was in full swing, the exhibit hall was filled to capacity—with farmers, merchants, school teachers, school children, and others.

Actually, the conservation project was a State-wide affair for the 1947-48 school year, voted by the delegates to the League's annual convention. It received much publicity as an activity in which some 30,000 pupils in 3,600 rural schools participated. It won for the League the "Certificate of Exceptional Merit" from the National Association of Conservation Education and Publicity.

But it took a view of this single part of the project at Parker to make one fully understand just how important this conservation education project is. I know I was not at all prepared, when we rather casually gathered in the exhibition building, for what I saw and heard: There were two tables covered with models of conservation farms and soil profiles, two racks filled with thick conservation scrapbooks, and the greater part of two walls of the building covered with conservation posters and conservation essays.

The hundreds of exhibits were well worth looking over closely in order to appreciate the understanding the teachers and the children had gained of conservation practices and results. It was evident that a great deal of study and work had gone into the undertaking, locally. All that we saw was the product of but one of South Dakota's 69 counties, and only two of the Turner County items went to the State event as part of the exhibit from its "circuit" of 11 counties.



**Hugh Bennett presents plaque to Miss Laurene Hofer, teacher of District 32 school.**



**Part of exhibit by rural schools of Turner County.**

There was ample evidence of the ingenuity used in planning the scrapbooks, in building the model farms, and choosing subjects for the essays. And the products of each school were the results of small communities working together. Thus, the young people of these localities were accomplishing something they wanted to do in the way they wanted to do it. They had voted for this type of project through their delegates at the annual meeting and were carrying on according to their own ideas.

It occurred to me that while this exhibit was part of what perhaps was the biggest conservation education effort ever undertaken in the county, it was also a symbol of something still larger. Miss Laurene Hofer, in fact, was representing all of South Dakota's school teachers when she accepted the plaque for District 32 school. And Roland Ortman, a pupil in that school, was speaking for all of the State's school children when he spoke as master of ceremonies.

But they were speaking, also, for the teachers and pupils of the whole Nation; they had moved ahead in their conservation work according to the typical American way, through education and communities working together toward a common goal. Working together, their efforts resulted in a State-wide conservation education program that won national recognition. Working together in this manner, this great country of ours can be kept permanently great by taking the best possible care of its basic asset—indispensable, productive land.



# Water IN GROUND • Corn IN CRIB



Diagrammatic comparison of corn yields (derived from actual 1948 photographs and data) on three natural watersheds of 4 acres each, under different land-use practices. Left to right—straight rows, contoured rows, and contoured rows plus sub-tillage.

By JOHN A. ALLIS

NINE DOLLARS per acre adds up to a lot of money. It also adds up to what the water, lost in 1948 by up-and-down-hill farming on sloping, fairly heavy land, would have been worth to farmers, figured at present prices for corn.

Evidence of this value is found in the harvest at the Soil Conservation Service experiment station near Hastings, Nebr., where small watersheds are farmed in different ways in order to measure the influence of conservation farming on controlling floods in small tributaries.

The experiment station is on the Matie Eigenberg and Fred Lampman farms, 22 miles south of Hastings. The small watersheds are all similar, and the same crop rotation has been used on all of them during the last decade. Seven of the watersheds were in corn this year.

While all yields were larger this year than last, conservation farming topped up-and-down-hill farming by just about the same margin—about 5½ to 6½ bushels of corn per acre. The money difference was less this year because corn prices were lower.

Twenty-three bushels of corn per acre was the yield on the watersheds farmed up-and-down-hill, with a 3-year crop rotation of corn, oats, and wheat.

On the watersheds where contour farming was added to the crop rotation to conserve water, however, the yield was 28.7 bushels per acre—5.7 bushels per acre more than on the straight-row watersheds.

And on the watersheds where both surface tillage and contour farming are practiced for all crops in the rotation, the yield was 29.7 bushels

per acre—6.7 bushels more than on the straight-row watersheds.

Yields in 1947 on the watersheds that were in corn were 14.4 bushels per acre under up-and-down-hill operations, 20.9 bushels per acre on the contour-farmed watersheds, and 20.7 bushels per acre where both contour farming and stubble-mulch tillage were used. These watersheds were in wheat this year.

Most of the water saved by conservation farming, and worth about \$9 per acre to farmers in 1948, came during the heavy rains. For example, take two that fell during the summer. One of the rains fell July 9, totaling 1.71 inches. It came during a period of 6 hours, but not steadily. The first half inch fell during the first 15 or 20 minutes, then there was a period of an hour when little fell. The second half inch followed the slack period, and also in 15 or 20 minutes. The last 0.7 inch came in the next 4 hours.

Even with its “made to order” character—that is, a good shower and then a slack period to let the first rainfall soak into the ground—the corn farmed up-and-down-hill lost 0.4 inch, or nearly a fourth in runoff. This left 1.33 inches of rainfall to soak into the soil. But on the contoured and subsurface-tilled watersheds, less than 0.15 inch of rainfall ran off, leaving nearly 1.6 inches of water to go into the ground.

The other storm—on July 18—dumped 0.93 inch of rain in 16 minutes. It reached a rate of 6 inches per hour for a 5-minute period. The peak runoff rate—that is, the flow when runoff is at the highest during the period—was about 3.3 inches per hour from the watersheds farmed up-and-down-hill, but only about one-half this high on the contour-farmed watersheds and one-third as high on the subsurface-tilled watersheds.

NOTE.—The author is project supervisor, Soil Conservation Service, Hastings, Nebr.



Not only were the peak rates of runoff from this storm significant, but the total runoff was equally impressive. Two-thirds of the rain that fell on the up-and-down-hill watersheds was lost by runoff, while less than a third of the rainfall was lost by the contoured and subsurface-tilled watersheds.

The summer of 1948 was typical of central Great Plains weather. A period marked by hard rains was followed by drought, with hot winds, in August. During the wet period in June and July, when over 4 inches of rain fell each month, the subsurface-tilled watersheds lost less than half as much and the contoured corn lost less than a third as much water by runoff as the corn farmed up-and-down-hill. The subsurface-tilled corn had the added advantage of reducing surface evaporation. The saving, or storing, of this water during the wet spell was reflected in the crop yield.

These runoff rates have another meaning to people along streams, in addition to the value of the water saved, in terms of crop yields. They indicate that while there may be runoff from all of the watersheds, it will be somewhat less and much slower from all the land where stubble-mulch tillage is practiced than on watersheds that are farmed up-and-down-hill. This, in turn, reduces the likelihood of floods in the small tributaries, because the flow of runoff is spread over a longer period instead of being dumped in large volume into the streams with a rush.

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## GROUP ACTION IN DISTRICTS

*(Continued from page 230)*

ing in this manner. Quite understandably, they hesitate to discard old methods in favor of new ones. It's hard to change habits!

A second obstacle is that the well-developed techniques of working with individuals must be modified and some new ones developed in work with groups. Although no two groups are exactly alike, it is not difficult to map their membership and locate their leaders. Unless the leader is already sold on conservation, getting him interested to the point of moving ahead with his group involves some principles which are different from the individual approach. Some leaders are ready to call meetings of groups immediately; others may wait weeks, or through an entire work season, before calling a meeting. But whatever the situation, a basic principle of group action is working

with and through the leader. If this point is not observed no advantage is gained over single-shot methods.

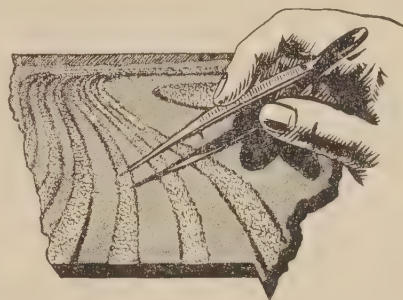
Unless a man will work for the welfare of his group he is not the true leader. The truth of this observation is demonstrated as leaders call and act as chairmen of planning and application meetings, counsel with their group members, request district assistance when needed, route equipment, and otherwise coordinate activity. Although these men work effectively and unselfishly, it will be noted they do not seek public notice, and many do not even wish to be called "leader."

Experience has proved that group action is practical, and at least part of the solution of the problem of attaining permanence of conservation on the land.

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## UPPER MISSISSIPPI

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**TO DISSECT LAND PROBLEMS.**—A land economics institute has been scheduled at Iowa State College, June 13 to July 20.

Designed to aid in a better understanding of the major land problems of the Nation and to point a way toward their solution, the course is open to educational and research workers, administrators of land programs, students working toward advanced degrees, and others.

Subject matter includes soil surveys and classification, conservation of land resources, forest land problems and policies, recreational and urban land use problems, livestock and land use, special problems in soil and water conservation, world resources and industries, economics of agricultural policy, economics of Government resource use programs, population problems and policies, advanced land economics, land valuations and appraisal, and production economics.

A special seminar in land problems and policies will include lectures and discussions by outstanding authorities from different sections of the Nation.

A folder describing the institute may be obtained by writing the Department of Economics and Sociology, Iowa State College, Ames, Iowa.

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## NORTHEAST

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**THAT'S A LOT OF TREES.**—A million trees will be planted this spring on Allegany County, N. Y., farms co-operating with the Allegany Soil Conservation District. Reforestation is being established on more than 400 farms under complete conservation plans, and 100 more farms will be added to the list before next summer.





**BETTER FARM, BETTER ROAD.**—When the township highway department in 1 year moved 50 truckloads of soil from a road adjacent to his upper Pennsgrove farm, near Salem, N. J., R. L. Heritage decided it was time to do something about it. When he looked into the source of this soil he found that it was in his own farm lands. Discovery that some of his fields were only half as big as they were 20 years ago was a terrific shock. Of course, they still contained 160 square rods, but to a third dimension—depth—something had happened. In 20 years the 10 inches of topsoil had shrunk to 4 or 5 inches. Technicians working in the South Jersey District recommended a complete farm conservation plan with first emphasis on contouring. Heritage installed these practices. Highway crews have no more soil to haul from the roadway along his farm.

**POND CUTS PREMIUMS.**—When it is constructed within effective range of farm buildings, a pond can bring a reduction in fire insurance premiums. Walter Klammer, Jr., conservation farmer near Passaic, N. J., solved a tough problem that way. He has about \$50,000 worth of wooden buildings on his farm. When the insurance expiration date approached, the company notified Klammer it would not renew the policy "because the risk is too great."

Klammer took his problem to the Northeast Jersey Soil Conservation District and got quick action from the directors. SCS technicians working with the district made surveys, designed a 1-acre pond that would eliminate a swamp, and supervised the pond's construction 500 feet from the buildings. In addition to fire protection, the pond will provide fishing and swimming. The first insurance company has renewed the policy and cut the premium more than 20 percent.

## SOUTHEAST



**NEIGHBORHOOD FIELD DAY.**—Approximately 300 farmers and others gathered recently in the Hartsfield community of Colquitt County, Ga., to watch a community at work applying a soil and water conservation plan on the farm of Curtis Gay. Seventeen farmers gave a full day of their work and 14 furnished tractors and equipment. An oil-company agent donated the tractor fuel and a farm-supply company furnished 6 tons of limestone

for a pasture area. Gay furnished seed and fertilizer for plantings. The work included terracing 10 acres, plowing, harrowing, fertilizing, and seeding sericea lespedeza on three meadow outlets, sprigging coastal Bermuda on about 3 acres, planting Dallis grass on 2 acres, and overseeding Kobe lespedeza on the Bermuda and Dallis grass. Five acres of pasture were fertilized, posts were placed for relocation of a fence, and a partially constructed earthen dam was completed, and brush and trees were removed to provide a farm pond. The event, which was more like an old-fashioned logrolling than a big farm "face lifting," was the result of a suggestion made at the annual meeting of the Georgia Association of Soil Conservation District Supervisors by Kent Leavitt, president of the National Association. Howard E. McCravy, a supervisor of the Middle South Georgia District discussed Leavitt's suggestion for demonstrations on a community basis with Jack Faison, deputy supervisor and president of the Hartsfield chapter of the Farm Bureau. The field day, held under the joint sponsorship of the Hartsfield chapter of the Georgia Farm Bureau and the supervisors of the Middle South Georgia Soil Conservation District—the first of a series of planned neighborhood conservation field days—was the result.

C. W. CHAPMAN.

**POKEWEED POSSIBILITIES.**—At last the lowly pokeweed may win a more elevated place on the southern farm than that of supplying "wild salad" as a spring tonic for the winter-worn.

Verne E. Davison, southeastern regional biologist, SCS, believes that pokeweed can be used to advantage in conservation farming. And with that in mind, Davison is closely watching trial plantings at the SCS Nursery, Brooksville, Fla. Additional tests are being established in South Carolina and Georgia. Nursery workers have successfully produced crowns from seed.

Davison thinks that trial plantings may show how the pokeweed can be handled best in conservation farm patterns to provide a supply of the juicy berries and seeds for doves, quail, and other birds during late summer and all winter months.



J. A. Johnson scrutinizes pokeweed growing wild on strip mine spoil bank in Smith County, Miss., where mined lands are being converted to a haven for wildlife.



**NO GRAIN FEEDING.**—E. T. Layton, of the Simpson County Soil Conservation District, Miss., recently sold six calves at auction for \$920 that had never been fed any grain. The calves were about 6 months old and ranged in weight from 450 and 550 pounds. They sold for from 30 to 35 cents a pound on the hoof. Layton has his pasture so arranged that he gets year-around grazing. The calves grazed oats, wild winter peas, and white clover, and finished on kudzu.

**TEN-YEAR-OLD PINES.**—Many people wonder why the Webb brothers of Perry County, Ala., were working in 1939 to establish large areas of badly eroded land in pine trees, supervisors of the Black Belt Soil Conservation District report. Today, the trees are large enough for telephone poles and pulpwood. There are 35,000 acres of land in the district which need to be planted to trees, and there is a backlog of orders for seedlings with the State nursery, which they are unable to furnish.

**VIDEO SHOW.**—About 20 enlarged photographs were used on a recent television broadcast over WMCT, Memphis, Tenn., to explain the work of the local soil conservation district. Taking part in the program with Walter Durham of the WMCT staff were C. E. Ishee, SCS technician, and County Agent L. J. Kerr. Ishee used black-and-white pictures to explain the planning and application of practices, giving the name of the local farmer in each case. Kerr told of the organization of the Shelby District and Durham emphasized the importance of soil conservation to the entire community.



On the air: County Agent Kerr, WMCT's Durham, and SCS's Ishee.

**AN UNUSUAL LEASE.**—A landlord and tenant in the Shenandoah Soil Conservation District, Va., who happen also to be father and son, are operating under a lease agreement which incorporates their soil conservation plan as the farm management part of the lease. Another unusual feature of the case is that the farm is said to be the old homestead of Abraham Lincoln's father, located about 10 miles north of Harrisonburg, Va.

**PAY DAY EVERY MONTH.**—Earl Hemphill, of the Simpson County Soil Conservation District, Miss., reports that he has been practicing conservation farming for only

2 years, but that he is making more money, is improving his land, and is enjoying a better standard of living as a result. "I now have a pay day each month instead of once a year," he adds.

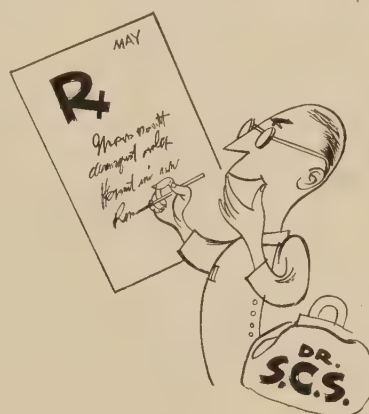
**\$10,000 OVERNIGHT GAIN.**—J. D. Scaggs, of the LaRue County Soil Conservation District, Ky., says that he has turned down \$10,000 more than he paid for his farm since a "face lifting" demonstration held there last October. "You can't realize how proud I was of those terraces after an awfully heavy rain fell on November 5. I couldn't wait until the rain was over to see what was taking place, so I just took off in the downpour and walked all over the farm. I couldn't find any damage at all on the slopes between the terraces. Every one of the terraces was running full and taking the water around the hill to the outlets. I'm sure the farm would have been nearly ruined without the terraces and outlets."

**POWER OF PRESS.**—A regular weekly news column by J. D. P. Thompson, work unit conservationist in the Northwest Alabama District, relating experiences of local conservation farmers, brought the following message on a postal card, signed by Miss Lena Roberts:

"Your notes on soil conservation have interested us; hence, my father and I would be pleased to have you stop at our home and discuss with us some of the things which we might do to help save the acres we own.

"We live just outside the city limit, north of Cox's Creek on the old Jackson Road. If going north, ours is the second house on the east side of the road. This favor will be appreciated."

## SOUTHWEST



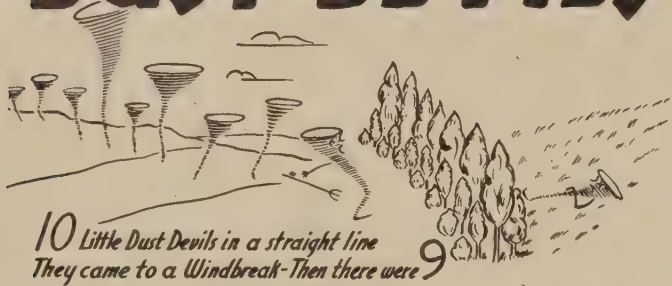
**PRESCRIPTIONS FOR LAND.**—Soil conservationists have to use various methods to explain a complete conservation program to farmers. Two agreements were recently signed without hesitancy by two Spanish-American farmers, when the comparison was made between a medical prescription for a patient and a prescription for the land.

When the word prescription was first mentioned, the farmers looked as if they were confused in mind, but as the discussion progressed the sparkle began to reappear in their eyes. These farmers had gotten prescriptions filled for some of their family, and it was brought out that the doctor always gave oral instructions with the definite instructions on the bottle. The same is true of a land prescription; a lot of oral instruction is given along with the prescription. Too, the medical doctor makes periodic checks on the patient; the same should be done by conservationists to see if the sick land is improving.

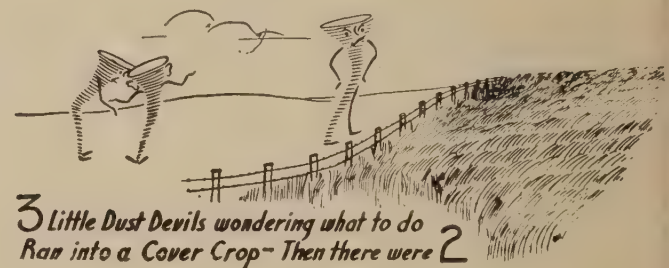
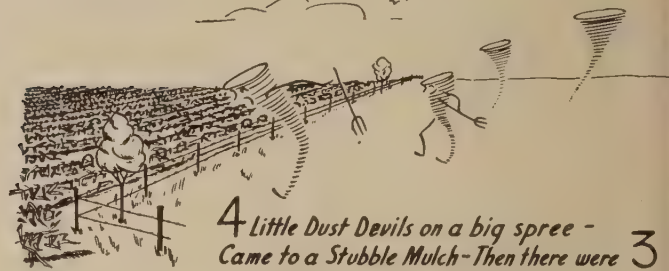
JODY F. BOSTON.



# 10 LITTLE DUST DEVILS



5 Little Dust Devils playing as before  
They ran into a Fishpond-Then there were 4



by Kenneth C. Carter & Charles J. Koch  
SOIL CONSERVATION SERVICE, ALBUQUERQUE, N.M.



**COLORADO CONTEST.**—The *Denver Post* and radio station KLZ (Denver) announce their second annual soil conservation recognition contest, in which Colorado soil conservation districts and individual farmers and ranchers will compete.

Cash awards of \$500 will go to each of the five districts scoring the greatest number of points based upon application of soil and water conservation practices. Fifty percent of the scoring will be based upon work done by three farmers or ranchers, while the other 50 percent will be based upon work in the district as a whole. Each winning district also will receive a plaque inscribed with the names of the district officers and the three farmers or ranchers chosen to represent the district in the contest. Each farmer or rancher representing a winning district will receive a framed scroll.

Rules provide that nominations must be in by July 10. Regional judging on a watershed basis will be made between July 10 and August 31. State judging will be held between September 1 and October 1. Award banquets for winning districts will be held between October 1 and November 15.

Entries in the contest must be sent either to Lowell Watts, KLZ farm reporter, or Ralph Partridge, farm editor of the *Denver Post*.

---

**LABOR ECONOMY.**—Concrete irrigation ditch-lining on the 625-acre farm operated by James Francis and Ira Moore in the New River Soil Conservation District, 7 miles north of Glendale, Ariz., has reduced labor costs by two-thirds, is saving from 20 to 25 percent on water, and will pay for itself in a little more than 14 months, these farmers declare.

Francis and Moore long had realized that they were losing too much water and that labor costs were high. Believing that concrete lining, along with other improved irrigation practices, might solve their problem, the farmer-partners entered into an agreement with the supervisors of the New River District in 1947. The work was started immediately and completed early in 1948. The 11,831 linear feet cost \$9,231.61, or 76 cents per foot including the necessary structures.

Since one well usually is used to irrigate a quarter section of 160 acres in this area, Francis has figured costs on this basis. One man now can irrigate 160 acres in 24 hours, whereas before the ditches were lined, three men were needed to do the job in the same period. This means an actual labor-saving of \$1,680 for each 160-acre tract. The cost of lining a half mile of ditch, which serves 160 acres, was \$2,006.40. Therefore, Francis figures that the \$1,680 labor-saving during a single irrigation season was only \$326.40 less than the cost of construction on each 160-acre tract.

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**OVERNIGHT STORAGE TANKS.**—Soil and water conservation work started in 1946 on the Otra Banda ditch in the Pojoaque Soil Conservation District, Santa Fe County, N. Mex., has increased crop production 30 percent on 200 acres and decreased maintenance costs 50 percent, according to Cresenciano Roybal, ditch commissioner and lifelong resident.

Prior to 1945 landowners on the ditch had no dependable water supply. Arroyo damage, silting, seeping of water, and other erosion resulted in high annual maintenance cost. Often the ditch would break when water was most needed and labor for repairs had to be taken from regular farm work. During such shortages water for young fruit trees had to be hauled in barrels. Under such conditions crop production was considerably below capacity.

In 1945, the ditch commissioners, Noberto, Demetrio, and Cresenciano Roybal, called on L. K. Sandoval, of SCS, for assistance in carrying out a soil and water conservation program. A complete plan was agreed upon between the ditch commissioners and the Pojoaque District supervisors.

In carrying out the conservation plan, 1,150 feet of 8- and 12-inch perforated metal pipe, 1,350 feet of clay tile, and 60 feet of 21-inch tile under an arroyo crossing were installed. Other improvements included the laying of 200 feet of flume through a very sandy area, construction of a 100-foot metal siphon across an arroyo, and the straightening of 2,600 feet of ditch with the width and depth being made more uniform. Three collection boxes, and 11 small overnight storage tanks with proper turnouts also were constructed.

These improvements resulted in the waterflow available to the irrigation ditch being doubled. This was determined by actual measurement of the spring water flow from the Pojoaque River.

"The water supply now is adequate to take care of our gardens and orchards and for limited production of other crops," Roybal said. "Our gardens and orchards do not suffer from lack of water during critical growing periods. Installation of overnight storage tanks has decreased the need for night irrigation and has made it possible for the women and children to do most of the irrigating. The men now can devote full time to regular farming operations since the need for ditch repairs has been practically eliminated and maintenance has been reduced to a minimum. Group participation in this project also has caused individuals to do more soil and water conservation work on their farms.

"Maximum results have been obtained," Roybal says. "For example, prior to 1946, the crops from my 3-acre garden brought me less than \$200 annually, but last year the production was more than doubled and was worth around \$1,000."

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## PACIFIC

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**NORTHWESTERN FRONTIER.**—The public schools of Pullman and Colfax, Wash., in the heart of the famed Palouse section, are calling on soil conservation district supervisors and local farmers in search of better ways of teaching soil conservation in the elementary grades.

Superintendent Louis Bruno, of Pullman, started the idea when he brought together more than 100 farmers, their wives, teachers, district supervisors, businessmen, and professional soil conservationists and told them he wanted "grass roots" advice on how to get soil conservation across to youngsters in grades from 1 to 12. A similar meeting was held at nearby Colfax a few days later.

Out of the meetings came many concrete proposals. Definite plans were made to incorporate soil conservation in such courses as science, reading, English composition, geography, and others at all levels of instruction.

A later series of meetings was held with faculty members and SCS technicians to work out detailed teaching methods. Paul C. McGrew, State conservationist, is keeping an eye on developments. He describes the movement as "real pioneering in the field of soil conservation education."

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## WESTERN GULF

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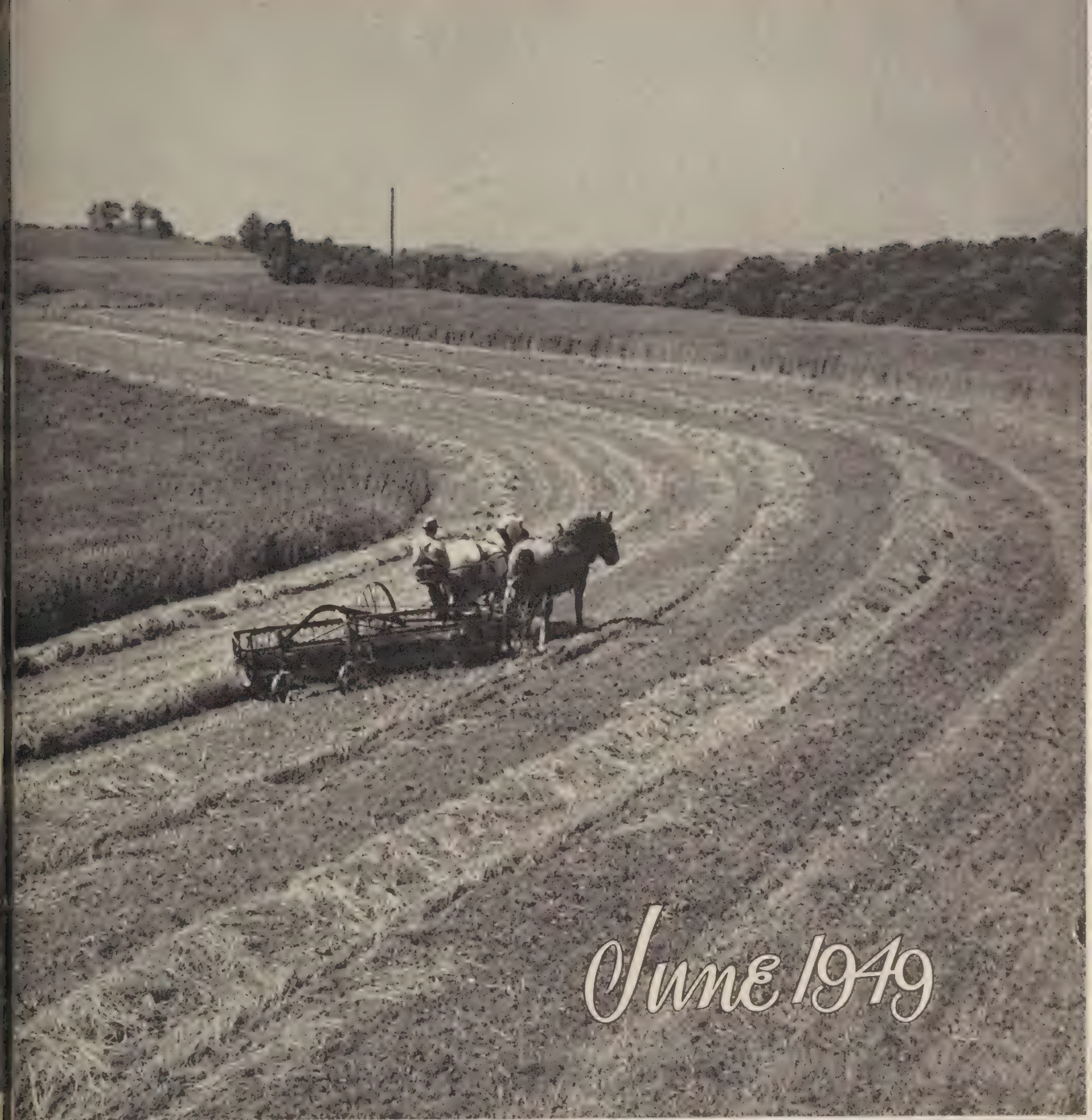
**KEEPING UP.**—Two banks in Antlers, Okla., have purchased subscriptions to SOIL CONSERVATION Magazine for 125 district cooperators and civic organizations. There is a growing demand all over the country for this periodical as a means of keeping cooperators and others loaded with the latest ideas, techniques, and news items in the field of soil and water conservation.





Beautiful only in retrospect. The angry blizzards piled the snow high on highways and side roads, posing a tremendous challenge to manpower and machine power. The vast drifts had to be broken through before supplies could be carried to stranded man and beast. See "Operation Snow-bound," p. 219.





*June 1949*

# ≡ SOIL CONSERVATION ≡

**OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE**

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.



# SOIL CONSERVATION.

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**CHARLES F. BRANNAN**  
SECRETARY OF AGRICULTURE

**HUGH H. BENNETT**  
CHIEF, SOILS CONSERVATION SERVICE

ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE  
WASHINGTON, D. C.

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**WELLINGTON BRINK**

Editor

Art Work by

**W. HOWARD MARTIN**

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with approval of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

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**MISSOURI FACTS.**—The Pemiscot County (Mo.) Soil District set a 1948 accomplishment record that includes 50 miles of field ditches and 9 miles of dragline ditches constructed, 452 acres of land leveled, 2 miles of spoilbank leveling, 732 acres of green manure crops turned under, 1,836 acres of winter cover crops, 240 acres of pasture established, 140 acres of pasture improvement work, 818 tons of limestone spread on 397 acres, 298 tons of fertilizer applied to 2,600 acres, 46 tile outlets put in to take field water to dragline ditches, 104 acres of clearing and grubbing, and 2.2 miles of multiflora-rose fence established. Other progress of the 150 cooperators included crop rotations, home improvements, and the keeping of farm records.

One district farm figured the federal cost of technical assistance by the Soil Conservation Service at one-tenth of 1 percent. Speaking as a taxpayer, he noted, "I made between \$7,000 and \$8,000 in 1948 and paid an income tax of about \$1,000. In other words, out of \$8,000 I paid only \$1 for the help I got from the Soil Conservation Service in cooperation with my district."



**THE COVER.**—J. W. Troendly, Route 1, Stonecreek, Ohio, mowing hay on a first-year meadow strip of timothy and alfalfa mixture. The meadow strips are between strips of wheat. Troendly is a supervisor of the Tuscarawas Soil Conservation District headquartered at Coshocton. Photo by Hermann Postlethwaite.

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# SOIL CONSERVATION EDUCATION at Oklahoma A. & M. College

By HI W. STATEN

**D**R. CYRIL G. HOPKINS, in his little book, "The Farm That Won't Wear Out," published in 1913, said "It is an old saying that any fool can farm and this was almost the truth when farming consisted chiefly in reducing the fertility of new, rich land secured at practically no cost from a generous government. But to restore depleted soils to high productive power is no fool's job, for it requires mental as well as muscular energy. . . . Safe and permanent systems of soil improvement and preservation may come with intelligence—never with ignorance—on the part of the landowner. When knowledge becomes general that food for plants is just as necessary as food for animals, then American agriculture will mean more than merely working the soil for all that's in it."

Dr. Hopkins, the sage of soil scientists more than 50 years ago, advocated soil conservation and good farming methods for the purpose of holding and conserving that which nature had spent millions of years in creating. About the time Dr. Hopkins was telling about the farm that won't wear out, we here in Oklahoma and Indian Territory were cutting and slashing the native timber and plowing out the fine bluestem sod for the purpose of growing cotton, corn, wheat, and sorghums. At the present time about 2½ to 3 million acres of that fine prairie land is abandoned to poverty grasses and gullies and an equal acreage is near abandonment.

This brings me up to the main point of this story. We will whip erosion through the education of the young men and women of our country. Personnel of the teaching staff at Oklahoma A. & M. College in 1937 decided to do their "bit" in the matter of training young men in the field of soil conservation. In September 1937 a course en-

titled "Agronomic Soil Conservation" was offered to senior students in the School of Agriculture. Very likely this was one of the first colleges in the country to offer a course of this kind. The course was named and described in our college catalog as follows: "Field Crops 423, Agronomic Soil Conservation. Prerequisite: Senior standing. The application and effect of cropping systems, contour farming, pasture improvement and other agronomic practices in relation to soil and water conservation in Oklahoma." Specifically this course was designed for the purpose of teaching senior students good soil conservation, mainly through the practical route—the use of vegetation and good farming practices.

The first year the course was offered, 78 seniors enrolled and completed it. Each year thereafter, 1938 to 1941, an average of 125 seniors took this course. During the war only a few students were enrolled, but in 1946 the number jumped back to nearly 100 and has been increasing annually. This year more than 200 young men are enrolled in agronomic soil conservation. From 1937 to the present time more than 1,200 senior students in the School of Agriculture and 50 correspondence students have completed this soil conservation course, and a large percentage of these young men are now doing active soil conservation work with the Soil Conservation Service or the Indian Service.

Most of the students take the course because of the possibility of employment, while others have in mind using the information as county agents, vocational agriculture instructors, or farmers. Most of these young men take a Civil Service examination during the course and most of them pass with high grades. At the present time Oklahoma A. & M. College graduates are very active in soil conservation. A short while back I made a survey of over 600 students, all of whom had received their degrees either in field crops or soils

NOTE.—The author is professor of agronomy, Oklahoma A. & M. College, Stillwater, Okla.



(agronomy) and 145, or 22 percent, are now with the Soil Conservation Service. About 86 are teaching veterans, 70 are farming, and 25 are in the Indian Service. These young men are scattered throughout the United States. The largest percentage is in Oklahoma. Many of them, however, are working in the southeastern States, Texas, Arkansas, Louisiana, and New Mexico. Some of them are soil scientists but most of them are doing farm planning or general pasture and range work. It has been found by Soil Conservation Service personnel that young college men who have had this course are about ready to go into the field without the usual preliminary training period.

Textbooks are now somewhat plentiful in this field, but these students have used the text written by the Chief of the Soil Conservation Service, H. H. Bennett. When they finish reading this very large but well-written text, they feel they have sat with the master of conservation of the world.

This course now is attracting so many students it is likely additional staff members may have to be employed for the purpose of assisting in the instruction. Considerable inquiry has been made but I have been unable to find many colleges giving much consideration to the matter of instructional work in soil conservation. One sometimes wonders why. There is no doubt that the proper managing of our soil is the most important subject in the field of agriculture at the present time. If this statement is doubted, the doubters are invited to come to one of the youngest States in the Union and see for themselves what damage can be done in 50 years.

In closing I would like to emphasize the importance of saving the soil by quoting from Bulletin No. 2, "The Destruction of the Soil in Palestine," by F. H. Taylor:

"Have you ever stopped to consider how long the population of the world could survive if there were no soil left on the earth? The answer is, just as long as the people could exist without food. All cereals and vegetables and fruits are grown in the soil. All animal products such as milk, meat, butter, cheese, and eggs come from animals and birds which live on crops grown in the soil. Thus, without soil there would be no human life. Nevertheless, in spite of man's complete and utter dependence upon the soil for his life, man has done his utmost to destroy the soil, and in our present age, this destruction has reached an unprecedented scale."

## DISTRICT PROFILE

ELLER  
of  
N. C.

Every State must have a *strong* man in soil conservation. Wade E. Eller from Ashe County, N. C., an amiable person in his fifties, is such a man.

But soil and water conservation is only one of Eller's interests. This short, stocky Blue Ridge Mountain farmer takes part in many activities that contribute to public welfare in northwestern North Carolina.

After graduating with honors from Trinity College (now Duke University) in 1912, Eller taught school at Riverview for 13 years. Even then, he realized that man must work in harmony with Nature. "We mountaineers found that we had to do so if we were to stay here," he explained as we looked about us at the long steep slopes.

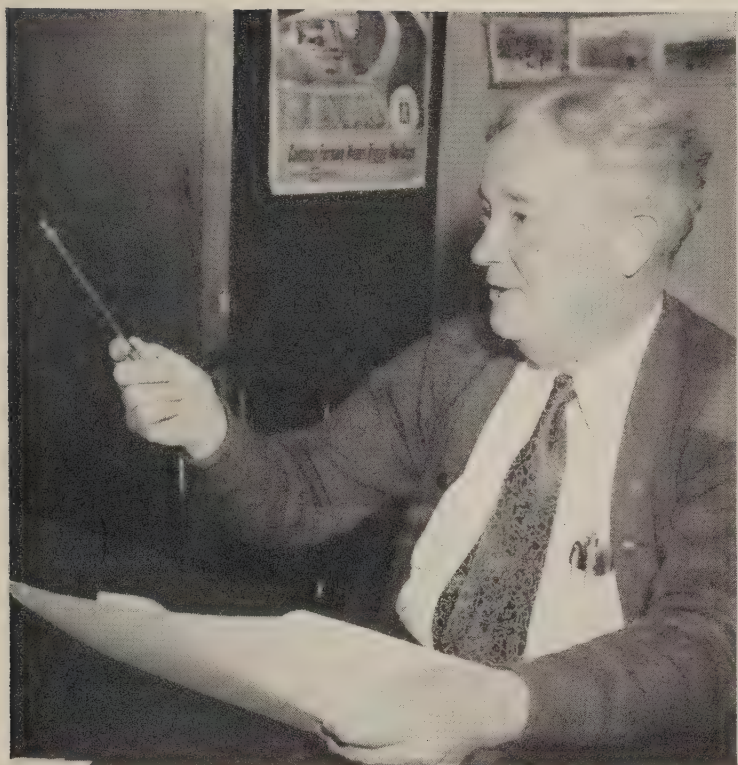
When the New River Soil Conservation District was organized in 1941, Eller became one of its first supervisors and still serves as the chairman of the governing body. He also was among the first to apply a complete soil and water conservation program to his own land—two farms of 187 acres.

"Soil conservation practices have increased the productivity of these farms 1,000 percent and have stopped erosion. My records prove this to be so." District Conservationist Staton McIver added that Eller practiced grassland farming with both beef and dairy cattle. He had less than 1 acre in row crops last year.

During the past year, Eller served as president of the North Carolina Association of Soil Conservation District Supervisors. It was in this capacity that he led district supervisors and county soil conservation committeemen in making a thorough appraisal of the condition and conservation needs of the 84 counties comprising the 23 districts in the State.

Using land data provided by the Soil Conservation Service and such pertinent information as other agricultural workers could supply, these farmers studied their conservation problems, county by county, until they were satisfied they had made the best assessment that could be made.





Wade E. Eller.

Now Eller envisions the time when he and other local people will supply the leadership needed to carry out the conservation program.

"We must continue," he said, "to exert our influence and such leadership as we possess until we get the fullest contribution that can be made by every agency, organization, and individual from every strata of society. We already are getting some valuable help from a number of these, but more is needed in advancing the program from local and State levels. The supervisors don't want to be the star players—we want teamwork by all who can make a contribution."

Eller is serving his third year as a member of the State soil conservation committee and is working hard toward his goal. His conception of the place of district supervisors, districts, agencies, and of soil conservation itself in the whole picture of human betterment is wholesome and inspiring. "Soil conservation is just like a warm blanket," he explained. "It covers the whole farm and countryside and is comfortable and satisfying. Its various practices and measures are interwoven to make it strong and give desired results."

But Eller is not one who thinks that conservation of our soil and water resources can be brought about by swivel-chair dreamers pushing buttons. "It must be done, for the most part, on the land by shirt-sleeve work with the farmers who own and operate the land," he said. "That is the secret

of the success of the Soil Conservation Service. We are on our way to a healthy and productive agriculture."

And the North Carolinian does not speak of health loosely. He is secretary of the board of directors of the hospital at West Jefferson, president of Western North Carolina Health Association, health administrator and sanitarian of the Alleghany-Ashe-Wataugh Health Department, and does more to promote the installation of grade A dairy-farm units than any other man in that part of the State.

Wade Eller is also a member of the Methodist Church, a Rotarian, a member of the executive committee of the North Carolina Forestry Association, and a Legionnaire who served in the armed forces in World War I.

His reason for giving so freely of his time and substance to all these? "Personal satisfaction from helping others."

—CAL L. ROARK.

**RANGE MANAGEMENT SOCIETY.**—Half the land area in the United States is used for the grazing of domestic livestock. Despite this, until recently there has been no professional society with a primary interest in the conservation and use of this vast and important part of our natural resources. Two years ago, the American Society of Range Management was formed. Two annual meetings have been held, the first at Salt Lake City in 1948, where 200 range men, most of them from the west, gathered to perfect their organization, elect officers, and adopt a constitution. During the past year, the society has grown to 800 members and expects to double its present membership in 1949. Present members come from 30 States, Alaska, Hawaii, and 3 foreign countries. Represented are nearly a dozen Federal agencies concerned with management of grazing land, chief among them such important conservation agencies as the Forest Service, the Soil Conservation Service, and the Bureau of Land Management. Many biologists, big-game specialists, and others interested in the preservation and management of wildlife and of "wild lands" have joined. There are also members from the State extension services, and heads of the range and conservation departments of leading educational institutions. Finally, and unique in this respect among professional organizations, the Society includes many of the *real* professionals, leading ranchers who earn their living in the production of livestock and in the management of grazing land. A quarterly, "Journal of Range Management," has been launched, three issues of which have already appeared.

Officers for 1949 are: president, F. G. Renner, chief, Range Division, Soil Conservation Service, Washington, D. C.; vice president, D. A. Savage, superintendent, Southern Great Plains Field Station, Woodward, Okla.; treasurer, M. S. Morris, head, Department of Range Management, University of Montana, Missoula, Mont.; and secretary, W. James Anderson, Bureau of Land Management, Department of the Interior, Washington, D. C.

**SPEAKING OF KUDZU.**—J. H. Shepherd, cooperator in the Richland Creek Soil Conservation District, Ky., has 6 acres of kudzu on his farm. He says his three cows and one horse "won't stay out of the kudzu long enough to get a drink of water."





Firebreaks were constructed to stop the spread of fires like this.

## FIRES DIE DOWN

By W. W. HULL

**W**ILD FIRES are a scourge to any forest, but especially to the slash-longleaf pine woods of south Georgia. Here gum farming is big business. Farmers chip the pine trees and the highly inflammable gum runs into cups attached below the wounds. If one of these forests catches fire, it's a good deal like the Biblical description of hell.

In Treutlen County 20 years ago, it was common practice to rake the straw a safe distance from each cupped tree and burn the woods each year. This removed the fuel and relieved the danger of severe wild fires. But it was hard, tedious work; and thoughtful farmers didn't like the damage the fires did to seedlings and small saplings. No young trees were coming in.

A few of the leaders decided to do two things—plant some trees and keep fires out by means of plowed furrows so nature could plant some. In the 1920's, planting trees and plowing in the woods were radical things to do—very radical. A few neighbors joined the movement, but not many.

A temporary boost to the program came when the county got an SCS-CCC camp. It planted some trees and put in a good many miles of fire-

breaks. But the camp was soon disbanded, the breaks were not maintained, and the fire-loss was still tremendous.

The Ochopee River Soil Conservation District was organized in 1940. It includes Treutlen, Emanuel, Montgomery, Toombs, and Wheeler Counties. The district supervisors are Jim L. Gillis, Jr., J. E. Hall, Felder Black, J. V. Lewis, D. D. McGreggor, and J. H. Mitchell.

Early in 1945, these men met to talk about woods-burning. For 5 years they had been directing a program of soil and moisture conservation which had as its goal the proper use and treatment of each acre of land in the district. A majority of the land had been mapped and classified according to its capability for various uses.

With the aid of SCS technicians, hundreds of farmers were using these maps to develop and carry out complete, detailed plans for using each acre according to its capability and treating each acre according to its needs. Land too wet for crops was developed as permanent pasture. Steep eroded land was planted to trees, or to kudzu or sericea. Cropland was terraced and protected with cover crops in a good rotation, and so on. But woods still burned!

The supervisors decided this had to stop. They studied the problem. They found there were lots of small landowners who did not have proper

NOTE.—The author is zone conservationist, Soil Conservation Service, Spartanburg, S. C.





Firebreak in young pines.

equipment for constructing firebreaks. A large portion of the fires were on these farms.

Fortunately the district had a little money. The supervisors instructed Jim L. Gillis, Jr., chairman of the board, to locate and purchase suitable equipment. The war was still on and machinery was scarce, but he managed to buy two large farm tractors and one disk tiller. He lent the district a second tiller until one could be bought.

The supervisors employed tractor operators and put them to work. The technicians planned the location of firebreaks and plotted them on maps. PMA payments took care of part of the cost.

Pretty soon the Montgomery County board of commissioners, at the suggestion of Supervisor McGreggor, put a track-tractor and fire plow to work. The State Forest Service representative does most of the work of planning and directing this operation. The SCS man works closely with him. Wheeler County now has the same type equipment, operated under the same arrangement. The district also operates a 12-foot motor grader, which was lent by the Soil Conservation Service for the construction and maintenance of the large-type firebreaks.

The larger landowners are encouraged to use their own equipment, so the district tractors can

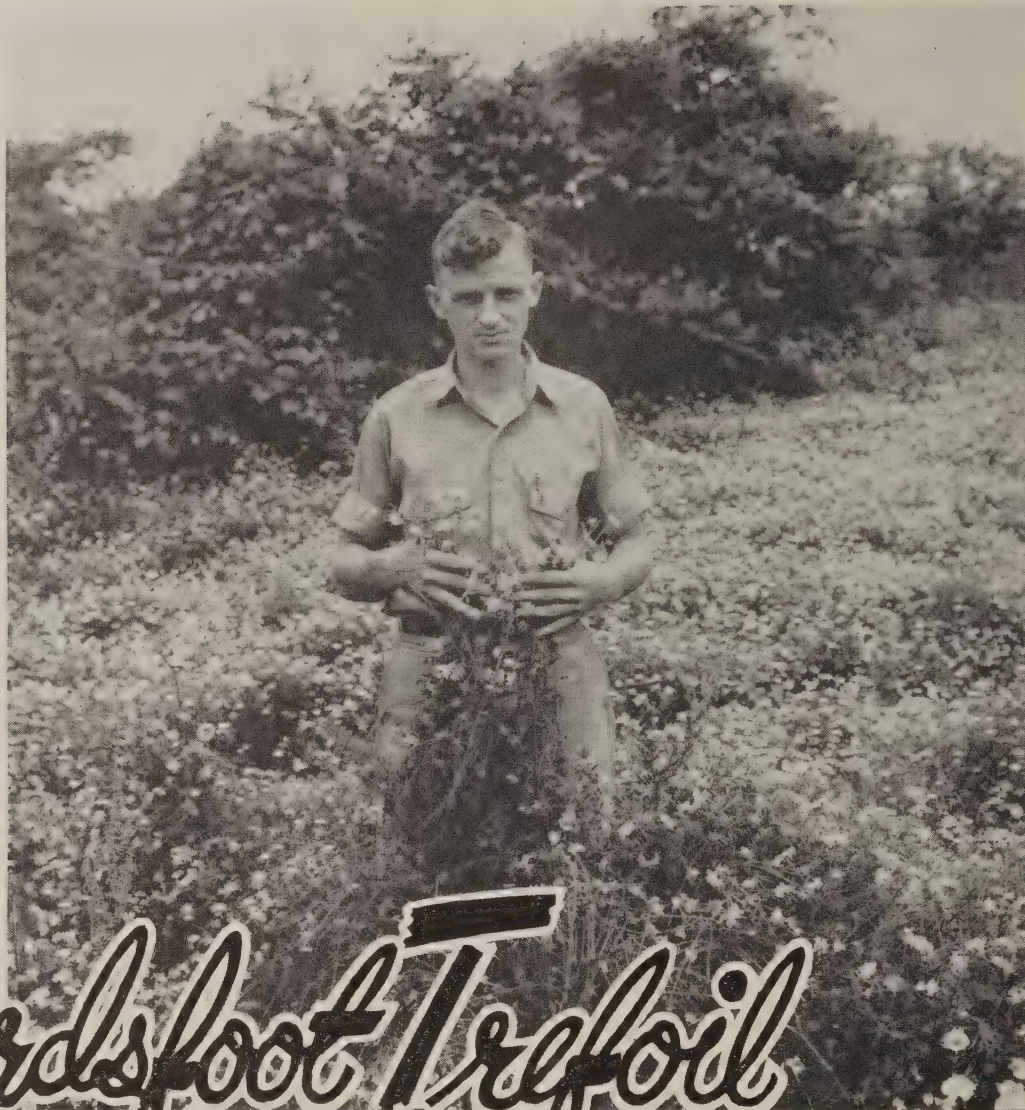
work on the smaller farms. All told, more than 2,000 miles of firebreaks have been constructed. Many of these breaks have been replowed for maintenance. The program is gaining momentum. Last August and September 230 miles of new firebreaks were constructed with district equipment alone.

There are still a few fires, but the raging inferno of past years has been smothered to a dim glow. Young trees are coming in fast now. Farmers are helping nature by planting trees. Saplings and older trees are laying down a heavy layer of needles to protect and build the soil. The district has the fire phase of its conservation program well in hand.

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**FIRE CAUSES GULLY.**—Farmers in the Southeast frequently refer to very intense rains as “gully washers,” but the supervisors of Rowan County Soil Conservation District, Ky., tell about a gully-forming fire in the 1948 annual report. The gully, they report, was caused by a forest fire that burned an old rail fence many years ago, destroying the litter and decaying vegetation on the forest floor. This permitted the runoff water on the steep slope to erode the unprotected soil along the fence line. The gully is now 20 feet deep and 70 feet wide. They point to this gully as convincing evidence for the need of effective forest fire control in the district, where between 70 and 80 percent of the land is in timber. They point out that floods, too, are retarded by a good cover of leaf mold in the woods.





# *Birdsfoot Trefoil*

## MAKES HILL FARM PROSPEROUS



Pure seeding of birdsfoot trefoil for seed production, on Leland H. Cooke farm. Seeding rate 8 pounds per acre, broadcast. Land treated with lime and superphosphate. That's Earl VanPelt of the Soil Conservation Service.

By **SIDNEY S. BUCKLEY**

**O**VER the last 8 years, a steady stream of visitors from far and near has come to Sunnyhill, 180-acre farm of Leland H. Cooke, above Preston Hollow, in southwestern Albany County, N. Y.

NOTE.—The author is work unit conservationist, Soil Conservation Service, Cobleskill, N. Y.

They have come to learn how Cooke and birdsfoot trefoil transformed poor hill land into a productive, prosperous farm.

At an elevation of 1,400 feet, the farm has soil that varies from shallow, well-drained and droughty to poorly drained; part of it underlaid with a claypan—just ordinary glaciated acid hill soil.



Cooke told us how this change gradually came about.

"I wanted to farm," he said as he gazed over his fields. "I looked for a place to rent, but they were scarce. Finally, I found and rented this farm. Since I was born in this neighborhood, I knew its history. My wife, our baby daughter, and I moved here in the early spring of 1932. Two years later we bought it.

"It had lain practically idle for a couple of years. The buildings were in very bad shape; the man who was last on it had burned part of the barn for firewood. I came here with two cows, four head of yearlings, a pig, and some hens. I bought two horses, one for \$20 and the other for \$40. I paid \$10 for a wagon and harness. That summer I cut hay, but it was very poor. It was so thin on some fields I couldn't see where I had raked. The whole farm was about like that—very poor."

For several years the going was tough. The first 2 or 3 years Cooke had to buy hay. The old barn could hold 30 tons, but there wasn't nearly enough hay to fill it. Part of the time Cooke worked on the town roads to help make a living.

"Our bills really hurt," he recalls, "and when I got hold of some money, I'd portion it out among those I owed to try to keep them all happy. At the general store in Preston Hollow I ran a bill for \$470. If the storekeeper, Baird Elsbree, had tried to collect this bill, I'd have been cleaned out. He carried us along until things got better.

"The first year I found six to eight unusually bright green patches, from 15 to 30 feet in diameter, in the meadows and about as many more in the pasture fields. I thought it was vetch. When it was ripe, I cut it and fed it to the cows. They liked it and also liked to graze these spots after the hay was off. The ripe seed went through into the manure, and when that was spread on the meadows I began to see more of this plant in the hay.

"There was more of it on the Arnold farm across the fence. The Arnolds had been using this for some years. Patches of it grew on the farm across the road from our house, too."

We wanted to know how Cooke started producing seed. As we walked over the farm, he told the story this way:

"In the summer of 1936 when Walter Mason, Albany County agricultural agent, tested my

fields for lime, I asked him what this plant was. He didn't know. Later he brought George Serviss, extension agronomist, along and Serviss called it birdsfoot trefoil. They asked me if I'd grow some seed so the college could start experiments. That's how I came to make my first seed crop that year from my fields, and also from some of my neighbors' fields across the road. I owe a lot to Walt for getting me going with birdsfoot.

"I cut the hay when the seed was about ripe, cocked it, cured it, put it in the barn, and later ran it through a threshing machine. From both places I made about 600 pounds of seed. In 1937 I made about 2,000 pounds from the two farms. Also, I sowed 10 acres for seed production."

Every year since then Cooke has made seed, as low as 250 pounds and as high as 4,600 pounds in a year. In 1948 he made only 2,100 pounds because much of the crop was lost when three hot, dry days opened the seed pods.

Putting the hay in the barn or stacking it outdoors and later threshing it, Cooke found, made poor feeding hay and took too much labor. Now he uses a combine with a separate motor to run the threshing mechanism because it gives a steady, even speed that gets more of the seed. The hay is windrowed when cut. After it has dried on top, it is turned over by hand, where the growth is heavy, to dry the other side of the windrow. In combining directly from the swath, he found, it dried out so quickly that he lost seed. He makes his easiest and best seed from the poorer fields where the growth is short.

Cooke has his third combine. After 3 year's use, he says it pays to get a new one as birdsfoot harvesting is hard on a machine. A breakdown of a couple of days at seed harvest time could easily cost more than the price of a new combine.

As we climbed the fence into the pasture, he said: "My home farm is all birdsfoot trefoil now. Erosion is no problem here because all the land is in sod. I have not plowed any here in the last 8 years. I think I can sell my plow and drill now."

Asked about his seeding and fertilizer practices, Mr. Cooke replied: "I have usually seeded with oats, using not over 2 bushels oats with 5 to 6 pounds birdsfoot trefoil and 6 pounds timothy. Where I tried seeding clear, it came in ranker and thicker the first year, but in the second and



# HAIRY INDIGO MAKES ITS BID

By PAUL TABOR, H. B. HELMS, and  
C. B. BLICKENSDECKER

following years, there was no difference so far as I could tell. I think it better to seed with oats as the weeds are clipped when the oats are taken off. Many of my hay fields were seeded by top-dressing old meadows with manure from cows fed birdsfoot trefoil hay.

"On some of my pastures I broadcast seed by hand early in March. For the first year or two when the birdsfoot trefoil was in bloom, I could see just where I had cast the seed. Now it is a solid stand.

"My soils need 1½ tons lime for clover, according to test. When seeding birdsfoot, I use 1 ton ground limestone and 300 pounds 20-percent superphosphate to the acre. After several years I top-dress with 600 pounds 20-percent superphosphate to the acre. This phosphate makes a big difference in the height and color of the trefoil. Manure makes the growth too rank for easy combining. I put it only on fields I use for hay or hay silage, not on those I intend to take seed from."

We talked about the carrying capacity of his farm, and as we came up the lane toward the buildings, he said: "I keep 26 milk cows and 14 head of young stock, mostly Guernseys and Jerseys. In 1948 they produced 189,000 pounds of milk. Soon the farm will keep 42 head of milkers. I have space for that many in the barn I have just built. The farm could carry 60 milk cows plus young stock if I had more barn room. For the last 3 years I have sold about 100 tons of hay a year. The present stock cannot make use of all the pasture.

"With the added 90 acres I recently bought, this farm requires the work of myself, one full-year man, one man during the growing season, four or five extra hands during the seed harvest period, and my 12-year-old son Laurence, some of the time."

Besides doing an outstanding job on his farm, Cooke has been a director of the Eastern New York Birdsfoot Trefoil Corporation, Inc., since 1941. As a cooperator in the Albany County Soil Conservation District he has a complete farm plan.

Two things make this farm operation successful: First, Cooke's energy and intelligent management of the farm; second, the fact that birdsfoot trefoil has proved to be an almost ideal hay and pasture legume for dairy farms under the trying conditions prevailing in this hill section.

FROM ONE escaped plant in 1931 to 50,000 acres in 1948 is the record of hairy indigo in Florida!

Hairy indigo is a native of Africa and Asia. It was brought into this country by the United States Department of Agriculture in 1908, again in 1914, and for the third time in 1916. It was discarded after preliminary trials. In 1931 George E. Ritchey, agronomist of the Department and of the Florida Experiment Station, found one plant growing in a coal pile at Gainesville. He saved its seed and started new trials. Other seeds were brought in during 1934. In a few years Ritchey became convinced the plant had possibilities for Florida agriculture and became its sponsor.

In 1939 Ritchey gave two small lots of seed to the nursery division of the Soil Conservation Service. One lot, planted in central Alabama, produced seed in 1939 and 1940 but was caught by an early frost before seed matured in 1941. The other lot was planted at Brooksville in central Florida. It has continued to produce seed each of the years since. Much of the seed in Florida can be traced back to this small beginning on the Withlacoochee Land Use Project at Brooksville. From 1939 through 1942, the seed was increased on the project. In 1943 some went to the Sand Hills Citrus Demonstration Project, Haines City, Fla., for a soil-conserving cover crop in a new orange grove planted on the contour. Seed from this area was harvested and widely used on cooperating farms in the demonstration project during 1944 and 1945. Some was returned to Brooksville in the spring of 1945 when an SCS side nursery was established.

During December of 1943, District Conservationist David P. Ventulett and other Soil Conservation Service workers hand-picked seed from an experimental field at Leesburg, Fla. This was allotted to two cooperators in the Marion Soil Conservation District. Approximately 1,000 pounds of seed were produced there in 1944 and

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NOTE.—The authors are agronomist, regional nursery division, Spartanburg, S. C.; assistant State conservationist, Gainesville, Fla.; and SCS nursery manager, Brooksville, Fla., respectively.





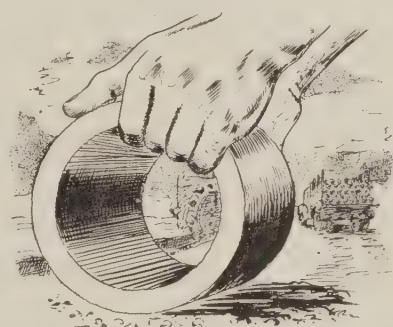
Hairy indigo being grown for seed at Brooksville, Fla. Plants in foreground were clipped 4 months previously to reduce stem growth. The clipping also reduced seed production.

sold widely over the State. Much of the present supply of seed in Florida traces back to these plantings. In 1946 more than 85,000 pounds of seed were harvested by district cooperators in Marion, Alachua, Citrus, and Hernando Counties of central Florida. Larger quantities were harvested during 1947 and 1948 throughout the State and now the crop is quite common in practically every county.

Hairy indigo is widely used as a cover crop. It volunteers well in citrus groves, in corn, and after oats and vegetable crops. Farmers and ranchers are using it for supplemental grazing and hay. It is widely adapted to well-drained sandy soils of Florida and is rapidly replacing crotalaria as a summer legume cover crop. Its rank growth, wide adaptation, soil-improving ability, and good reseeding habit make it a good soil-conserving crop.

An early-maturing strain was introduced by the Department of Agriculture in 1943. In 1945 a small lot of seed furnished by Ritchey was planted on the SCS nursery in central Alabama. From the seed increase there, approximately 1 acre was planted at Brooksville in 1946. During each of the years, 1947 and 1948, about 15 acres were grown for seed production at Brooksville, and less at Americus, Ga., and Thorsby, Ala. Approximately 6,000 pounds of seed have been distributed to soil conservation districts from these nurseries.

Cooperating farmers who received seed in 1947 and 1948 have produced and sold considerable quantities of seed to other farmers. This early maturing strain is being widely planted in 1949.



**BIG TILE JOB.**—With \$4,500 in savings tucked under 26 cooperators' belts in 1 year, as a result of purchases of 17 carloads of tile, supervisors in the Greenbrier Soil Conservation District at Lewisburg, W. Va., have started a new series of purchases that is likely to rack up still greater savings in 1949.

There is a wide need for tile ditching. When the district supervisors obtained the use of a tile ditching machine from the West Virginia State Conservation Committee in the spring of 1948, they thought their chief troubles were over. Then they learned that local sources were not able to supply tile in the volume needed. They did, however, find that they could make carload-lot purchases which would insure delivery when and where needed, and at a price saving of 30 to 50 percent.

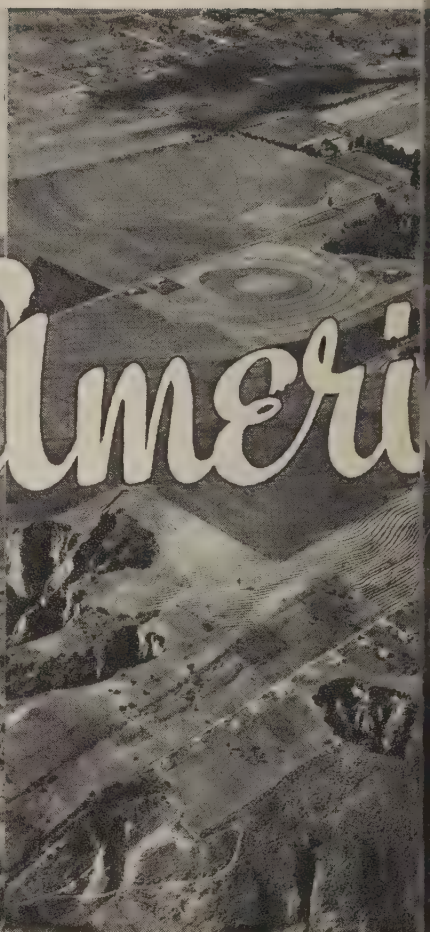
The 1948 program called for almost 160,000 feet of 4-, 6-, and 8-inch tile. Cooperators had 54,000 feet on hand, or had arranged to buy it locally. To supply the remainder, supervisors bought 17 carloads. Orders were spaced sufficiently ahead of time to maintain steady operation of equipment.

The tile installed on 26 farms directly benefited more than 300 acres.

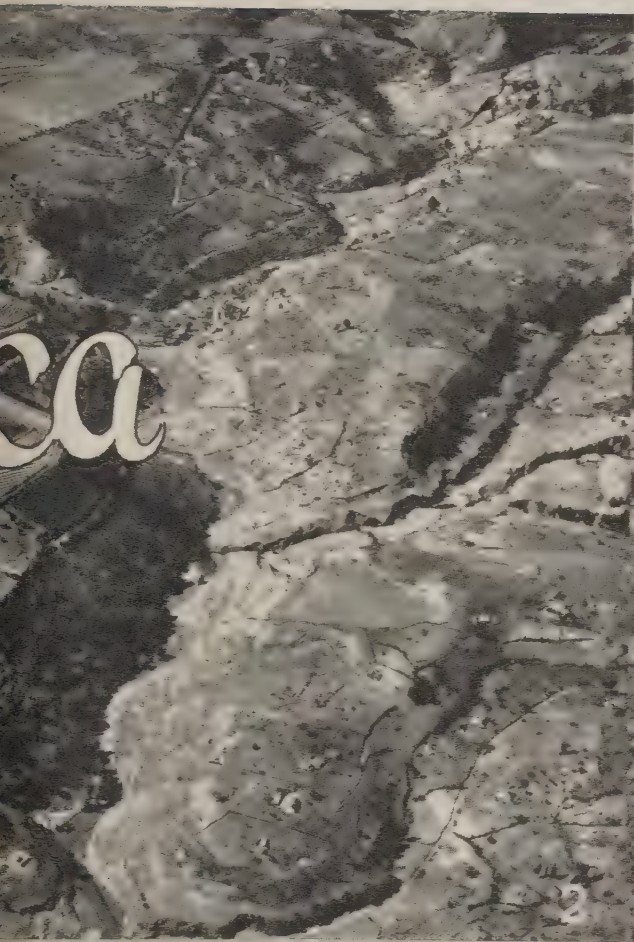
The first load of tile for 1949 has already been received, and operations now under way will run through August.



# PROGRESS in Latin America







*(For an explanation, turn this page.)*



## PICTURE SPREAD, PAGES 252 AND 253

### PROGRESS IN LATIN AMERICA

(All photographs by courtesy of Office of Foreign Agricultural Relations)

Photo No. 1 is a view of strip cropping at the Peruvian Government experiment station at Kcaira, near Cuzco, Peru. Former SCS employee Jim Mitchell, who took these pictures, explains: "When I visited this station in 1944 for the purpose of shooting some of its work, I was astonished to have the station director point out the broad bands of alfalfa that show across the foreground of this photo. In answer to my questions, he said that he had never seen any such thing before but had read an article on strip cropping in *SOIL CONSERVATION Magazine* and this was his first try. Later, when we were in his office, he showed me his file of the periodical and I thought you would like to know that fellows like this struggle through your articles and get something from them even though they do not easily read English. The strips interested me, too, because this is near the historic Inca capitol of Cuzco and some of the terraces and ridges in the background of the picture have been there since Inca days.

"Photo No. 2 was taken near Quetzaltenango, Guatemala, at the Guatemalan experiment station. I was not able to land or get much information on the work shown but some of our staff in Guatemala City in-

formed me that this work was done by Mario Orozco M., a Guatemalan student who was a trainee with SCS here in the United States in 1944. The view attracted my attention because it so clearly showed the typical Guatemala highland washing away on one side and the bold contours in contrast."

Photo No. 3 is of James T. Wyld (lower right) lecturing to a group of Guatemalan agricultural students who are studying soils. Wyld, a Guatemalan, is a staff member of OFAR's cooperative station Instituto Agropecuaria Nacional and spent some time in the United States in 1946 and 1947 as a trainee with SCS and ARA.

Photo No. 4. These familiar runoff measuring tanks were sent to El Salvador by SCS and are probably the first of their kind in Latin America. They are installed at OFAR's cooperative station in El Salvador, Centro Nacional de Agronomia, near San Andres. Manuel Chavez V. is a member of the OFAR staff and leads the conservation work. He was with SCS in 1944 as a trainee.

Photo No. 5. Cotton planted on the contour with a strip crop of kenaf (*Hibiscus cannabinus*), a fast-growing, fiber-bearing plant. Rice strips in the background. Cotton is 29 days old from seeding July 17, kenaf is 3 months old from seeding May 23.

Photo No. 6. Contour rotation of strips of corn at left and *Dolichos lablab* at right. Lablab is 2 months old from seeding June 6.

**SCHOOL BUYS FARM.**—Two West Virginia counties, Jackson and Mercer, are setting a stiff pace for other counties through progressive steps in expanding agricultural education, particularly relating to soil and water conservation.

In Jackson County, under the leadership of R. P. Kiser, county superintendent of schools, and Assistant Superintendent Sommerville, two important steps have been taken:

1. The first requirement of all freshmen vo-ag students in the two high schools, Ripley and Ravenswood, is preparation and acceptance of a complete farm conservation plan for parents' farms. This will bring 100 new plans before schools recess for the summer.

2. Establishment of a complete new soil and water conservation course for all elementary students. This will reach 2,500 boys and girls annually. Eighty percent are from farm families.

In Mercer County, where Charles H. Archer is superintendent of schools, the county board of education has

purchased a 43-acre farm opposite the Montcalm high and elementary schools. It will become an agricultural laboratory for all pupils in the county.

About a third of the tract is practically level bottom land suitable for garden and demonstration plots for vo-ag, FFA and 4-H projects. A few acres, wooded hills, offer feed and cover for wildlife and opportunities for reforestation and other conservation programs. The balance is in fairly level land on a higher plateau, where all modern soil and water conservation practices can be demonstrated and studied. Part of the bottom land may become a school athletic field. All of the remainder will come under a complete farm conservation plan. It will also serve as a demonstration center for adult farmers, and for minors who lease small tracts and raise vegetables for home use. Faculty members say they can teach arithmetic, commercial and other courses through production and cost accounting that students will do in connection with their school farm practices.



# PAMPAS GRASS

in

## Southern California

Field trial planting of pampas grass at Gorman, Calif., before grazing. Weather conditions at Gorman last year supplied only 4.4 inches of rainfall; temperatures ranging from zero to 100, at an elevation of 4,000 feet.

By PAUL E. LEMMON and PETER W. TAYLOR

**P**AMPAS GRASS for pasture? The average person, knowing this grass, would probably say, "You're crazy." Pampas grass, which grows in clumps up to 8 and 10 feet high, has long coarse rough-appearing blades that are edged with razor-sharp saw teeth. Some who have rubbed pampas grass the wrong way with their bare hands would say it is little more appetizing than a bundle of hack-saw blades. That is where the intelligence of humans and livestock differs. If you believe, as many do, that livestock won't eat pampas grass, you will be wrong. In the Quail Lake Soil Con-

servation District in Ventura and Los Angeles Counties in California, cattle not only eat pampas grass, they thrive on it, although it is definitely not their first choice.

Pampas grass, *Cortaderia argentea* (*C. sellona*), was introduced in Quail Lake and other districts by the Soil Conservation Service through the planned program of the nursery at San Fernando. One of the important jobs of the nursery is to help find or develop new and better plant materials for use in soil conservation. Pampas grass as supplementary dry-land pasture is one way to relieve overgrazing pressure on California range lands and prevent erosion.

During the long hot dry season, annual grasses which now cover most California ranges wither

NOTE.—The authors are manager, southern California nursery unit and range conservationist, respectively, Soil Conservation Service, San Fernando, Calif.



and die. This dead material makes a poor and nonprofitable diet for livestock without some supplemental green feed. It is seriously lacking in protein, vitamins, and essential minerals. But in spite of its poor feed value, many operators graze the annual residue to the last visible straw, leaving large areas bare. Without a protective surface layer of plant residue to act as a sponge, rainfall, which is normally deficient anyway, runs off instead of soaking into the ground. This starts a vicious cycle. The following crop of range forage is reduced because of lack of moisture and nutrients. With the same number of stock, the rancher has no choice but to graze this range land even harder the next year, and the next.

How to get out of this vicious cycle? That's the question that has been worrying California ranchers and range specialists for many years. Do you reduce your herds to eliminate overgrazing? Do you buy out your neighbor's range land? Do you go through the expensive process of buying feed from other areas and trucking it to your ranch? Or can you grow your own supplemental feed without irrigation? The answer is not simple. But growing pampas grass for supplemental dry-land pasture is at least a long stride in the right direction.

During October of 1948 a 2-year-old dry-land pasture planting of pampas grass in the Quail Lake Soil Conservation District furnished 1 month grazing for one animal per acre. It was during a year of abnormally low precipitation. During the 1948 plant-growing season only 4.4 inches of precipitation was recorded by an official Weather Bureau Station about 4 miles away. This animal unit month per acre of forage is equivalent to about 600 pounds of good alfalfa hay. When properly fed, it means about 50 pounds of beef.

Olaf Hovden, a director of the Quail Lake District who has kept a close eye on the field-scale trial planting of pampas grass, knows that the dollar value in terms of feed produced is only a partial measure of the full worth of pampas grass. Green feed in July, August, September, and October, without irrigation, is practically nonexistent. By having it available, ranches are able to make much safer and more productive use of large areas of range land in the district. They see pampas grass as a possible means of relieving the pressure on overgrazed range lands during dry seasons, which in turn will allow them to build back to a

higher carrying-capacity. Plans are already under way to expand the acreage in the district.

A good pampas grass pasture in the drier areas of southern California requires strict adherence to a few simple rules. (1) Select flat, nonerosive, cultivable areas of good highly productive soil. These can be small odd-shaped areas lying along waterways or in the valleys. (2) They must be fenced. (3) A thorough job of fallowing is necessary beginning in the early spring before any annual grasses or weeds have matured seed and continuing until planting date the following spring. This is to reduce competing weeds, store moisture, and build up nutrients for the establishment period. Tillage should be held to a minimum. (4) Plant seedlings or divisions from older plants. Best results have been obtained by hand-planting seedlings about 6 months old. These are grown in tar-paper bands  $1\frac{3}{4}$  by  $1\frac{3}{4}$  by 5 inches, 50 to a flat. They are planted in the field so that each plant will have about 36 square feet of ground for development. A 6- by 6-foot spacing is often used. (5) Planting should be done in the early spring after the cold weather has passed but while moisture conditions are still excellent for growth. Sometimes these plants are watered in at planting time. (6) The plants are kept clean-cultivated to save all available moisture and nutrients for the production of green pampas grass forage during the hot dry summer months. This type of crop culture is similar to that used for producing dry-land grapes. Pastures must be planted on areas where such treatment will not cause soil erosion or water loss by runoff. (7) After a full year of protection, moderate pasturing usually may be allowed. This should be taken during one comparatively short period each year, any time during the hot months of July, August, September, or October (sometimes November). (8) Plants should never be grazed closer than a 10- to 12-inch stubble-height after which complete protection is needed until the next grazing period. Application of nitrogen fertilizer or barnyard manure will increase the yield of this plant as well as most other plants.

This use of pampas grass is not new. Numerous published reports are available indicating the value stockmen are getting from this plant in Australia and New Zealand. Their methods of culture correspond closely to those enumerated above. From these published reports we have rea-



son to believe that the production on the Quail Lake planting will be greater than that shown after the plants are older and during seasons of normal precipitation. Its use as supplementary dry-land pasture in California has been suggested from time to time for many years. Most culture to date has been for ornamental purposes. The plumes have been used extensively for decorating show horses and for other such purposes.

In 1946 the Soil Conservation Service of the United States Department of Agriculture decided to find out the true value of pampas grass for dry-land pastures. Through its southern California nursery unit at San Fernando, planting stock has been produced for field-scale planting on farms in soil conservation districts throughout southern California. Actual livestock use is planned for these pastures. The planting in the Quail Lake Soil Conservation District is representative of one of these trials. It has represented one of the most favorable fields for the accumulation of information on actual livestock use because of the close cooperation of the United States Forest Service. This trial is located on land under their administration but which has been placed under agreement with the Quail Lake Soil Conservation District in an effort to help work out better range conservation.

## NORTHEAST

**DISTRICT RENTALS HELP TOWNS.**—When the town of Bath, Steuben County, N. Y., paid off the last of a 10-year-old debt, cooperating farmers in the Steuben County Soil Conservation District had the satisfaction of knowing that the money they had paid to the town for the use of labor-saving highway machinery in installing conservation practices had been an important element in this achievement. For use of this town equipment in 1946, 1947, and 1948, the district had paid the town \$4,294.65. Work was done on nearly 100 farms. In the same way, the district paid \$4,098.75 to the town of Pulteney and \$6,726.15 to the town of Hartsville for use of heavy highway equipment. In the Allegany-Steuben work group, involving two districts, there is extensive use of State-county-town highway equipment in a cooperative program that is considered to be one of the best in the country. Robert A. Reed, district conservationist in Steuben since 1946 and in Allegany since 1943, has helped to develop this cooperative effort.

**CAGNEY COOPERATES.**—Movie Actor James Cagney, who runs a farm on Martha's Vineyard off the Massachusetts coast, is getting ready to build a farm pond. Technicians working with the Dukes County Soil Conservation District have just completed the engineering. The flow from North Brook will be used and the pond will be largely for stock watering and fire protection.



**STRONG BACKS NEEDED.**—About 135 miles of stone walls and fences are scheduled for removal from Rhode Island farms to permit the consolidation of small fields and provide an area in which a practical job of applying strip cropping, terraces, and other erosion-control measures can be done. "There are so many stone walls and fences up here," says Russ Albright, SCS State conservationist, "that these 135 miles of walls never will be missed. In some instances the walls are so close together that fields are reduced to even less than 2 or 3 acres. They are too small to work with."

**ACCORDING TO THE SCRIPTURES.**—An unusual presentation of land capabilities was made by Earl L. Douglass, SCS district conservationist at Cobleskill, N. Y., when he built a talk around the Parable of the Sower (Mark 4: 3-8). This is how he told the soil conservation story:

3 *Hearken; Behold, there went out a sower to sow:*

4 *And it came to pass, as he sowed, some fell by the wayside (Capability VIII), and the fowls of the air came and devoured it up.*

5 *And some fell on stony ground (Capabilities VII and VI), where it had not much earth; and immediately it sprang up, because it had no depth of earth:*

6 *But when the sun was up, it was scorched; and because it had no root, it withered away.*

7 *And some fell among thorns (Capability IV), and the thorns grew up, and choked it, and it yielded no fruit.*

8 *And other fell on good ground, and did yield fruit that sprang up and increased; and brought forth, some thirty (Capability III), and some sixty (Capability II), and some an hundred (Capability I).*

**WEED-FREE TOP DRESSING.**—Clement Esty, a Middlesex district cooperator at Newton, Mass., has found a double-barreled substitute for manure in his market gardening operations. He tells Carl Clark, SCS work unit conservationist, that muck and peat are superior to manure in top-dressing soils. Where he uses muck and peat, soils are loose and friable and do not suffer so much from drought as the spots not top-dressed with these materials. Also, Esty finds that he has fewer weeds to fight since muck and peat do not carry weed seeds.

**ROUND AND ROUND IN WEST VIRGINIA.**—Strip cropping is moving ahead rapidly in the Greenbrier Valley Soil Conservation District in West Virginia.

J. H. Mitchell, a Butler Mountain farmer, near Lewisburg, reports that on his farm the practice has reduced soil loss to an absolute minimum. Strips enabled him to cut his corn acreage in half without reduction in total yield.

Ben Buck, another farmer near Lewisburg, used both contour strips and straight rows 7 years before reaching a conclusion. Now he is convinced. He's putting all his cultivated land in contour strips. "Yields are better," he says, "cultivation is easier, and soil and fertilizers are kept on the farm."



R. A. Baker, a farmer at Sweet Springs, Union County, finds that "contour strip cropping is the only safe way to crop sloping land.

"There are no gullies in my fields since I have been cultivating in strips. What little soil is lost is caught by meadow strips below. On three contour-stripped acres, I'm producing as much corn as I used to get from 7.5 acres."

**FAIR ENOUGH.**—New Jersey turned the tables when 11 farmers at the annual Farmers' Week at Trenton told the experts how to do conservation farming, and just what such farming means to them. These dairy, poultry, vegetable, fruit, livestock, general, and nursery-tree farmers recounted their experiences in working 2 to 10 years with complete farm conservation plans. In the closing question period, as a result of the interest aroused, the experts quizzed them for more information.

The general subject was "Does Conservation Farming Pay in New Jersey?" John C. Gilmour, Jr., of Haddonfield, was moderator. He is chairman of the Camburton Soil Conservation District.

Leland I. Warner, who farms 100 acres near Woodstown, stated that "conservation practices have given me a peace of mind that I had never known before," because they have stopped severe washing of his lands and have turned unproductive acres into acres that yield in abundance. In fields where he was getting only 10 percent as high yield as was being produced on his best fields,

Warner said he is now getting 80 to 90 percent. Eighty-five percent of his farm is in contour and strips.

Roland de Wilde, Sr., who manages a 560-acre nursery near Shiloh, recalled the losing fight he had waged against erosion for 16 long years. Then he detailed how in 6 years he has been able to control 90 percent of his erosion problem through operation of his complete farm conservation plan.

In 1942 water washing off his farm near Bridgeton flooded barn buildings, loaded them with silt, and put big dents in his production, Joseph Atkinson told the experts. By protecting his 125 acres with strips, contours, terraces, permanent hay and a rotation of corn, or tomatoes and grain and hay, he has successfully tied down his soil, conserved water, and increased production.

Alfred Richmond, poultry and dairy farmer near Whitehouse Station, said that adoption of complete farm conservation practices is the principle reason why he has been successful since he quit work as an auditor and became a farmer. His 6-year plan is nearly 100 percent installed. *He adopted it because of what he had read about soil conservation in newspapers and magazines.* From what he has observed, contour farming is easier than square-field farming, and it increases production.

Lauren Nelson's 54-acre poultry farm near Lakewood was put under a complete farm conservation plan as a CCC project. All recommended practices have been installed. "For a good many years," he said, "we followed the best advice we could get through college bulletins, and used crop rotations, liming, fertilizing, and many other



That's telling 'em! From the left: Alfred Richmond of Whitehouse Station, Joseph C. Atkinson of Bridgeton, Lauren N. Nelson of Lakewood, and Walter Klammer of Paterson, representing dairy-poultry farmers; Roland deWilde, Sr., of Shiloh, representing nursery tree farmers; N. J. Gilmour, presiding, chairman of Camburton Soil Conservation District, Moorestown; Robert H. DeBaun of Englishtown, and Mount Hutchinson of Allentown, representing potato growers; Raymond Adams of Burlington, representing fruit growers; and Leland I. Warner of Woodstown, and Charles Skistumas of New Brunswick, representing vegetable growers. (Photo by courtesy of New Jersey State Department of Agriculture.)



approved practices. But what happened? The rains came and washed away most of our efforts because our land was not tied down. Then we heard about contours and strip cropping and when we put these erosion-control practices to work, the other practices began to click. We're not worried any more. Conservation farming is like religion with me."

Mount Hutchinson, Freehold potato farmer, recalled his many troubles during years when rains and excess water sliced gullies and piled silt and debris on top of his vegetable crops below the slopes. He tried filling the gullies with straw, trash, and limbs from trees, but the next shower would sweep them away. In 1938 Soil Conservation Service technicians installed diversion ditches. Since then he has farmed on contour. He has no new gullies. The old ones have disappeared.

In summing up the program, Gilmour said: "Let's say, here and now, that the soil conservation program in New Jersey has come a long way and done a lot of good, from the missionary days to 1949, when these farmers told some of the experts and technicians in the audience how to conserve soil and water."

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## SOUTHEAST

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**FLORIDA DISTRICT TO RESCUE.**—When a group of farmers in the Dog Creek area of East Palatka, Fla., ran into trouble with floodwaters last August, they turned to supervisors of the Putnam Soil Conservation District for help. Things started humming.

Soil Conservation Service made surveys and plans showing what could be done. First, the county opened roadside ditches. Then, private owners hired two dragline operators to dig 3 miles of open ditches which SCS technicians laid out.

This work gave relief to 948 acres of farm land. Although there have been several very heavy rains since the ditches were completed, the water moved off as planned.

One farmer in the area said that a single rain last summer cost him \$650 in seed and fertilizer lost from early truck seedbeds. His share of the cost for ditching was about half this amount. He considers the money spent on ditching as mighty cheap insurance.

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**COVER CROP GOAL.**—One hundred thousand acres of cover crops in 1949! That's the goal set by supervisors of the Coastal Plain Soil Conservation District of North Carolina for 1949. And no small wonder. Listen to this story by Cooperator S. L. Dilda of Fountain community:

"In 1947, I turned under a good crop of Austrian winter peas on a 6-acre field and planted corn. Where I turned under peas I gathered 108 bushels of corn to the acre. In an adjoining field—same kind of soil but without peas—I gathered only 57 bushels to the acre."

Dilda added, "Last year I turned under peas on two fields. One made 119 and the other 82 bushels of corn an acre. The corn planted where peas hadn't been turned under averaged 40 bushels an acre."

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**VETERANS BUSY.**—Veteran trainees in vocational agriculture are not only receiving valuable help from SCS technicians but are making a sizeable contribution to the year's progress in applied soil and water conservation. Listen to this report of progress by the 240 veterans who started soil and water conservation plans with the Conecuh River District in Alabama last year:

Planted 425 acres with sericea lespedeza.

Set kudzu on 581 acres.

Seeded lupine on 2,993 acres, Caley peas on 214 acres, and reseeded crimson clover on 158 acres.

Terraced 2,512 acres.

**5-YEAR PLAN IN 3 YEARS.**—Walter Campbell, cooperating with the Carroll County (Miss.) Soil Conservation District, is converting a 1,000-acre cotton farm into a cattle farm. He has about completed his 5-year soil conservation plan in 3 years. "I have tried cotton farming and cattle farming," Mr. Campbell says. "Cattle farming calls for much less labor, which can be distributed equally throughout the year. In fact, I think cattle farming is the answer to the Carroll County hill farmers' problems."

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**\$100 PER ACRE—PER YEAR—MORE.**—Supervisors of the Laurel County (Ky.) Soil Conservation District estimate that \$2,000,000 per year could be added to farmers' income by proper drainage and management of the wet lands in the county. During 1948 nearly 100,000 feet of open ditches were constructed, including 75,000 feet blasted with dynamite. More than 200 acres of swampland have been drained during the district's 2 years of operation. The supervisors contend that every acre of this formerly worthless swampland is contributing about \$100 a year in additional income.

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**THAT COMFORTABLE FEELING.**—"It's good to stand on the porch during heavy rains and see the runoff water moving slowly along the terraces and out the grassed waterways," says P. A. Ray, cooperator with the Hardin County Soil Conservation District in Kentucky. "I know from experience that the water is not taking any of my soil with it."

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**BANK PAMPHLET.**—The People's Bank & Trust Co. of Tupelo, Miss., publishes each month a four-page illustrated pamphlet telling what farmers in northeast Mississippi are doing in conservation. It is mailed to about 10,000 farmers monthly.

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**FIVE YEARS AHEAD.**—A complete farm conservation plan is "the best assistance a farmer can have" in the opinion of William Wester, cooperator in the Amite County Soil Conservation District, Miss. "The farm plan set up for my farm by the Soil Conservation Service technician and myself has put me 5 years ahead in my farming operations," Wester says.

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**ACTIVE NEGRO GROUP.**—The Liberty Hill group of Negro farmers in York County, S. C., is carrying out an active soil conservation program, according to the supervisors of the Catawba Soil Conservation District. Theodore Roddy, group leader, says, "We are trying to have a good life, and one of our main jobs is to get our land in good shape. Our land is the backbone of our farm and community life. As we improve it, we have better products, more income, better homes, schools, churches, and a more satisfying life."

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**COMMUNITY LEADERSHIP.**—Supervisors of the North Central Alabama Soil Conservation District cite P. M. Hodges of the Mount Olive community as an example of what a good community leader can do. Hodges, small-farm owner and merchant and president of the Mount Olive Branch of the Jefferson County Sportsmen's Association, sought the assistance of the district in organizing farmers of his community to get a complete soil and water conservation plan on each farm. As a result, 14 district farm plans were made. Twenty bicolor field borders and 3 patches of partridge peas were established in 1948 as a part of the plans, and 14 more wildlife food patches are planned for 1949. The Jefferson County Sportsmen's Association is furnishing fertilizer for field borders and other food patches.



**QUICK ON THE UP-TAKE.**—Supervisors of the Northeast Alabama Soil Conservation District can rightly boast of how fast their cooperating farmers take hold of new soil-conserving plants. Here's why.

Cooperators now grow more than 5,000 acres of Caley peas that were first introduced to farmers of the district in 1944. At least 20,000 acres of the reseeding legume will be planted in 1949.

Starting with a small planting of button clover on one farm in 1945, they now have about 1,500 acres.

It was in 1946 that the district started sowing Kentucky 31 fescue. Now, more than 2,500 acres are covered with this perennial grass.

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**BANKER'S TIP.**—E. F. Vickers, president of the Citizens Bank & Trust Co. of Bainbridge, Ga., discusses soil conservation with all his prospective farmer-borrowers. When one farmer told him he wasn't interested in "storybook farming," he failed to get the loan. But a short time later he got a soil conservation plan on his farm and came back to see Vickers. He got a larger loan than he originally requested. "And we both made a profit," Banker Vickers commented.

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**LOANS CONSERVED, TOO.**—"A run-down, eroded farm is a poor financial risk," says W. C. Cooper, president of the Pelham Banking Co., Pelham, Ga. "Our crop loans are influenced a great deal by the care a man takes of his farm. We have got to protect our topsoil and use our land according to what it is capable of producing."

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**PRIZES FOR TENANTS.**—To increase the interest of tenants in soil conservation, R. C. Singletary, supervisor of the Flint River Soil Conservation District in Georgia, and his brother, A. J. Singletary, offered a number of prizes for tenants doing the best soil conservation jobs in 1948. The prizes were awarded at a big barbecue.

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**HAY AND MORE HAY.**—A. D. Holmes of Alfalfa Community in Alabama's Black Belt Soil Conservation District says, "Conservation farming has changed the looks as well as the yields of my farm. Three years ago I harvested 1,500 bales of hay from 40 acres. This year I harvested 2,500 bales from the same 40 acres."

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**FROM POUNDS TO TONS.**—D. W. Dorris, farmer, seed dealer, and commissioner of the Jefferson Davis County Soil Conservation District in Mississippi, says one indication of interest in soil conservation is the amount of soil-conserving crops seed farmers are buying, such as white clover, dallis grass, sericea, annual lespedeza, and so on. "A few years ago," he says, "we bought these seeds by the hundred pounds. During the last 2 years we have been buying them by the ton."

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**DAIRY FEED COST HALVED.**—Huton Cranford's winter feed bill for his dairy herd was cut in half because of grazing provided by a 30-acre field of crimson clover and oats seeded as a part of his conservation plan with the Covington County Soil Conservation District in Mississippi.

Cranford also noticed that spring and summer feed bills were much less after his cattle grazed on 20 acres of dallis grass and white clover. With a little checking, he found that these savings during the first year offset the cost of developing the pasture. So the Station Creek farmer bought 100 acres adjoining his farm to develop as additional grazing land.

**TOBACCO AND TERRACES.**—Tobacco and terraces go well together, according to Sam Houtchins, a supervisor of the Nelson County Soil Conservation District in Kentucky. During 1947 Houtchins planted 16 acres of tobacco in 1 week—5 on terraced and 11 on unterraced land. The unterraced land produced tobacco badly burned in the patch, lost bottom leaves, turned black, and had to be cut 12 to 15 inches from the ground. There were over 300 more pounds of tobacco per acre on the terraced land than on the unterraced land, and it brought 9 cents more per pound.

In 1948 Houtchins planted 16 acres of tobacco. This time he used 9 acres of terraced land, 4 acres with contoured rows, and 3 acres with straight rows. He said that there was a very noticeable difference in the quantity and quality of tobacco from these 3 areas.

"Tobacco on the terraced land was by far the best, with that on contoured land ranking second, and from straight rows the poorest," he reported. "Tobacco on the terraced land stayed green and didn't lose the bottom leaves during the drought."

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**IN CATTLE BUSINESS.**—R. O. Hardwick, of St. Clair County, Ala., says that when the soil conservation district program was first set up, he didn't think much of the suggestion made to him by technicians to put some of his best bottom land in pasture and the thin upland in kudzu and sericea. But he gradually made the changes set up in his farm plan. "Before I knew it," he said, "I was in the cattle business. We are now milking around 12 dairy cows. I am practically out of the row crop business, doing less work and earning more money much easier."

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**REFUSED \$75,000 FOR FARM.**—Alfred Gervin, cooperator in the Hinds County (Miss.) Soil Conservation District, says, "I moved to my farm in 1934 with \$59.80, a wife, seven children, and a determination to go to work." The district helped him to work out a farm conservation plan. "Today," Gervin reports, "my 1,200-acre farm is paid for. I just refused \$75,000 for it."

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**AS THE TWIG IS BENT.**—Commenting on the need for teaching soil conservation in schools, J. O. Dickinson, Etowah County, Ala., superintendent of education, said recently, "Conservation of soil, water, forests, and wildlife must be taught to the people and a good place to begin is in the schools."

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## UPPER MISSISSIPPI

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**UNIQUE SUMMER SCHOOL.**—The tenth session of the Ohio Conservation Laboratory will be held June 20 to July 27, 1949, at Camp Muskingum, on Leesville Lake, Carroll County, Ohio. This is a program of conservation experiences for teachers through a summer field course, offered by the College of Education of Ohio State University in cooperation with the Ohio Division of Conservation and Natural Resources.

The laboratory program covers 5½ weeks and carries 8 quarter-hours of undergraduate or graduate credit. The staff includes instructors in soil, water, mineral, plant, and animal resources, and the social and economic phases of conservation, together with specialists in school curriculum and teaching methods. The staff collaborates in giving a single course which requires the entire working time of the student. Class work consists of lectures and discussion periods which utilize local problems and natural features as teaching materials. In addition, groups of students, under the guidance of staff members,



make intensive studies of small plots of ground, and thus secure first-hand experience with conservation problems. Field trips to points of outstanding interest, lectures on special topics, and healthful recreation are important parts of the program.

A number of service scholarships are available which will provide instructional fees and other costs in return for a limited number of hours of work per week.

Many conservation organizations, including sportsmen's clubs, garden clubs, and service clubs are providing scholarships to the laboratory for qualified teachers.

To apply for enrollment or secure further information, address Charles A. Dambach, director, Ohio Conservation Laboratory, Ohio State University, Columbus 10, Ohio.

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## WESTERN GULF

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**ARKANSAS READERS INCREASE.**—SOIL CONSERVATION Magazine will be mailed as a gift to 221 farmers in Lee County, Ark. General Elgan C. Robertson, president of the First National Bank, and H. L. Petty, president of the Farmers and Merchants Bank, are sending 100 magazines each. Jack See and Glen Sharp of the Farmer' Supply Co. have purchased 21 subscriptions.

The board of supervisors of the South Crowley Ridge Soil Conservation District has been discussing the magazine with bankers and businessmen in Lee, St. Francis, and Cross Counties hoping to find ways to get it in the hands of farmers who need its information in order to do a better job in conservation.

**SEED-HARVEST FILM.**—A 10-minute film has been made of last fall's tremendous harvest of native grass seed in northeast Oklahoma. It is said to be one of the best conservation movies ever made.

The picture was taken by an amateur photographer, Charles Bradford, who works for the Public Service Co. of Oklahoma. When Bradford learned of the size and importance of the prospective grass seed harvest, he got out in the fields with his camera and filmed the whole operation. SCS prepared a script and the Texas Electric Service Co. paid for adding the voice that relates what's going on. The latter company also purchased a number of prints for use by SCS and others.

The northeast Oklahoma harvest of 3,250,000 pounds of native grass seed set a record. Probably not more than a million pounds of native grass seed had ever been harvested at one time before in the whole country. Farmers who had been tilling the soil for a couple of generations declared they never before had seen anything like the bluestem, switchgrass, and Indian grass that shot up to 6 feet, even 8 and 9 feet, across the Osage Hills and Cherokee Prairies.

The movie shows the tall grass growing, the preparations for harvest, the combines harvesting the seed, and the storage of the seed in United States Air Force hangars, barns, and other suitable places. It also brings out the significance of the big harvest in soil conservation work and the urgent need for seed to get grass planted on land rapidly eroding and contributing to floods.

It is believed there will be great demand for the film

in sections of the country where the harvesting of grass seed is becoming a regular farm operation and where the seed is needed badly to regrass eroded and depleted land.

**FARM RECOVERS.**—Three years ago M. H. Mansfield bought a run-down farm near Knox City, Tex. Deep gullies crossed the cultivated fields and the soil that was left appeared lifeless.

Mansfield went to the supervisors of his Wichita-Brazos Soil Conservation District for help. Together, SCS technicians and the owner worked out a plan.

Mansfield planted hairy vetch and rye on the worst areas and used the crop as green manure. Chisel plows left grain-sorghum stubble in the top layer of soil to help stop erosion and add organic matter.

Terraces were built to carry water safely off the farm. Mansfield made 45 big fills in his 4½ miles of terraces. He built a stock pond to furnish water and to keep his livestock from gathering around a water tank in his pasture. He fixed up an odd area with grain and brush for food and protection for quail and other wildlife.

When he bought the farm, cotton production was one-quarter to one-half bale per acre, and grain sorghum did well to make 1,000 pounds per acre. Last year he got more than a half bale of cotton per acre and more than 2,000 pounds of grain sorghum. He is growing crops where none would grow before.

"I'm expecting even larger yields when I get the organic content of my soil built up," he says.

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## NORTHERN GREAT PLAINS

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**TREE STORY FROM MONTANA.**—Cut-over forest land may be unpleasant to the dyed-in-the-wool big timber operator. But not to the John Doble family near Rexford, Mont.! Christmas trees last fall brought the family more than \$6,500.

The Doble lay-out is in the Tobacco Valley Soil Conservation District. It consists of 742 acres, mostly cut-over forest land that has been restocked naturally with Douglas fir. It has no cultivated land and only a small amount of open pasture. It is in the midst of one of the most important Christmas tree producing areas in western Montana.

Operation of the farm is wholly a family affair. A few livestock are produced, but most of the income is from the harvest and sale of Christmas trees. All the Dobles—Mr. and Mrs. and the two boys—pitch in on the tree harvest. Production has ranged from 16,000 to 24,000 Christmas trees a year.

The conservation plan calls for developing the land according to its capabilities. Some 20 acres were found to be suited for cultivation. This land will be cleared of brush and drained. The added feed will permit enlargement of the beef-cattle herd to 25 head.

A schedule for improvement of harvest on the wooded land was also drawn up by SCS technicians and Doble. Some of the large trees—the so-called overstory—will be cut out and marketed. This will be for the purpose of letting more light reach the smaller trees, so they can grow faster. Thickets will be thinned, needed pruning done, and grazing regulated.

Care will be taken, Doble said, to save the seed trees. Harvesting has been set up on a rotation system. That is, the trees will be harvested from one part of the farm one year, then from another part the following year, and so on. No part of the farm is to be harvested oftener than once every 3 to 5 years, depending on the rate of tree growth.

Doble estimates that his farm is capable of sustained production of 15,000 to 20,000 trees a year, plus increased livestock production, under conservation farming.

TRUMAN C. ANDERSON.



## SOUTHWEST

**HAIRCUTS AND SOIL CONSERVATION.**—Supervisors of soil conservation districts in Colorado are "sold" on Soil Conservation Magazine.

The Plateau Valley Soil Conservation District ordered sixteen 1-year subscriptions sent to school superintendents, a vo-ag instructor, the public library, a minister, two veteran instructors, the supervisors, members of the board of appeals, and one former board member.

In giving subscriptions, the supervisors write a letter to each recipient calling attention to the merits of the magazine and expressing the hope that he will continue to subscribe after the first year. The supervisors point out that, while they cannot subscribe for everyone in the Plateau Valley District, they hope that an annual expenditure of a few dollars eventually will result in widespread circulation in the area.

For the fourth consecutive year the Bent District has ordered 20 subscriptions for supervisors, libraries, schools, physicians, dentists, and even some barber shops!

**LONG DAM.**—Most of the 5-year conservation work on Oscar Appelt's 150,000-acre ranch in Pueblo County, Colo., has been completed within 2 years in cooperation with the Central Colorado Soil Conservation District. The Appelt ranch, largest in Colorado east of the Rocky Mountains, is used for Hereford cattle.

Appelt, formerly of San Angelo, Tex., purchased the ranch 3 years ago and immediately undertook an extensive soil and water conservation program worked out by SCS technicians working with the Central Colorado District.

Accomplishments include the enlargement and repair of 17 dams, the development of 5 springs, the building of 5 new stockwater dams, and a general range management program.

The largest single project has been the rebuilding of a dam on a lake near the ranch headquarters. This dam was built originally in 1902 by J. J. Drinkard, former owner. The dam is 750 feet long, containing 10,000 cubic yards of new fill. Later it will be raised two more feet. The dam is at the end of a meadow that has a drainage of only 672 acres. All of the water for the lake comes from springs in that area, producing about 1 cubic foot of water per second.

There are six large lakes on the Appelt ranch, all fed by springs. Impounded water is used to irrigate 200 acres of cultivated crops which are grown to augment the range-land feeding of cattle.

Appelt and his son, Oscar Appelt, Jr., who grazes Herefords on adjoining acreage, have about 5,000 head of cattle. There also are about 1,200 head of antelope sharing grazing privileges on the land, which extends about 25 miles in one direction and 30 miles in the other. Most of the ranch is in Pueblo County, with a few thousand acres overlapping into El Paso County.

**POJOAQUE REPORTS.**—Irrigation ditch improvements which will enable more than 600 farmers in the Pojoaque Soil Conservation District in New Mexico to conserve water and irrigate more efficiently have been made within the last year, according to W. A. Williams, Jr., district chairman.

Outstanding work was done on the Mesilla, Ortigas, and Garcia ditches in the San Pedro community, including the construction of a new heading for the three ditches, the district chairman reported.

In reporting on activities in the district during the last year, Williams said that 22 additional conservation plans for individual farmers were prepared with the assistance of SCS technicians. More than 12,000 feet of field irrigation ditches were built, 20,000 feet of soil-saving dikes constructed, 129 small irrigation structures installed, 5 over-

night storage tanks built, 87 acres bench terraced, and 8 acres of trees planted.

Williams announced that 70,000 acres were added to the Pojoaque District within the last year and that 22 landowners in the Sombrillo community have requested the State Soil Conservation Committee to have their land included.

**BARLEY PAID FOR JOB.**—The first subsequent crop from a 6-acre field more than paid all costs of leveling, according to Gus Laquey, who cooperates with the Tomichi Soil Conservation District, Colo., in carrying out a soil and water conservation program.

Laquey rough-leveled the field in the fall of 1947 and plowed, tilled, and finished leveling early in the spring of 1948. The cost of all operations was \$168, or \$28 per acre.

Barley yielded 156 bushels, or an average of 26 bushels per acre. It brought Laquey \$1.25 a bushel or \$195 for the crop. This was \$27 more than the cost of leveling the 6 acres.

Laquey says that a few of the spots that were filled have settled, so he plans to use an automatic leveler again this spring and then plant wheat. He will convert the field into permanent pasture next year.

Under his complete conservation plan, Laquey this year will clean and straighten a drainage ditch and clear and reseed some range land.

**RANGE IMPROVES.**—Good grass management is raising the carrying capacity of the 14,000-acre Urraca Ranch near Costilla, N. Mex., operated by John and Betty Anderson.

About half the ranch is a mountainous area of forest and meadows, while the remainder is in sagebrush. About 5 years ago the Andersons realized that previous misuse had put the ranch in poor condition and that something needed to be done to restore the vegetation. They entered into an agreement with the Taos Soil Conservation District and a complete soil and water conservation program was planned. Since then the ranch has been very lightly stocked, with only about 200 sheep, a dozen cows, and a few horses being grazed.

A recent survey revealed that western wheatgrass is spreading over the barren areas of the sage land and that the grama grass is improving. Anderson is especially enthusiastic about the improvement in the mountain areas. Protection during the growing season has given the mountain bunch grasses a chance to regain vigor, and Anderson now estimates that forage production has doubled.

He now plans to increase his livestock in proportion to available forage. Stock numbers will be adjusted up or down to correspond with grass conditions.

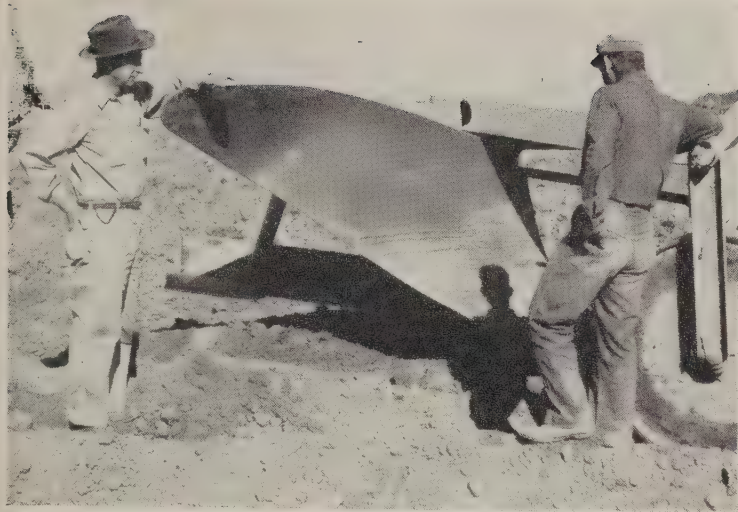
The Andersons also are interested in getting game animals and other types of wildlife on the ranch. There are already elk, deer, bears, turkeys, and grouse, and sage hens have been placed in the sagebrush area. Anderson knows that game animals cannot thrive where vegetation has been removed by excessive grazing. Proper grazing, he is convinced, will provide sufficient ground cover to prevent erosion and furnish favorable food and habitat.

Other developments include the seeding of 60 acres of cropland to crested wheatgrass for spring and fall grazing. Irrigation water from La Jara Canyon is used to irrigate this grass in the spring. Fences have been constructed to give a better distribution of grazing.

Anderson also has developed a spring and built a storage tank. A well has been drilled near ranch headquarters for permanent water. Small structures and ditches on the proper grade have simplified irrigation with spring floodwater.

The Andersons plan to continue their program of range improvement so more livestock can be fed without damage. They believe that as grasses improve more water will soak into the ground and bring a higher annual forage production.





**KING-SIZE FURROWS.**—Deep plowing, rough tillage, knifing, in fact just about any practice that will aid water penetration is popular with farmers cooperating with the Stanfield Soil Conservation District near Casa Grande, Ariz.

When these farmers say "deep" plowing they really mean it. During the past winter they used a 4-foot plow, which reaches a depth of 24 to 30 inches, on more than 2,500 acres. They say that this deep plowing not only increases the water-absorbing capacity of the soil but also mixes the tight topsoil with the sandier subsoil common in the Casa Grande Valley. Hundreds of acres have been rough-tilled in this way preparatory to planting cotton.

About a third of Pinal County's 159,000-bale cotton crop was grown in the Stanfield area last year, the average yield being 600 pounds per acre.

The Stanfield Soil Conservation District, west of Casa Grande, includes 70,000 acres of cultivated land and petitions for the addition of 15,000 acres have been filed.



**MAKING RIVERS BEHAVE.**—Accomplishments in clearing and channelization of rivers to reduce flood hazards in the New River Soil Conservation District in Maricopa County, Ariz., are featured in an eight-page annual report issued by the supervisors.

This work is being done on the Gila, Salt, Agua Fria, and New Rivers in cooperation with the Soil Conservation Service, the State Land Department, the Arizona Association of Soil Conservation Districts, and other agencies.

**DISTRICTS POOL RESOURCES.**—The Timpangos and Nebo Soil Conservation Districts in Utah County, Utah, plan to pool their heavy earth-moving equipment this summer, according to an announcement by Earl Alleman and Bernell Hanson, chairmen.

It is felt that through this merger, operating efficiency may be improved, and better and faster service given to cooperating farmers.

Under the new plan the districts will lease their equipment out to competent equipment men who will work on the various projects by turn. All necessary equipment and materials can then be used jointly on any given project.

**MAN OF MANY CROPS.**—Ernest Campbell, who owns a 29-acre farm 8 miles north of Duncan, Ariz., grows just about every crop adapted to this area with one exception—cotton. Campbell has grown cotton in the past, but doubts that he will ever plant another crop.

His is probably the most diversified farm in the entire Duncan Valley. Last year he produced alfalfa hay, wheat, hegari, potatoes, corn, Sudan grass for pasture, vegetables, peaches, and apricots. Each year he manages to produce a few head of Hereford cattle, about 25 hogs, 50 turkeys, several hundred dozen eggs, and rabbits by the score.

Last year Campbell's per-acre yields included 6 tons of alfalfa, 45 bushels of wheat, 37 bushels of hegari, 232 bushels of potatoes, and 70 bushels of corn.

Crop rotations, crop residue management, green manure crops, and pasture rotations, practices he has been using ever since he started farming, are keeping his land producing well.

However, Campbell believes that he may be able to increase his crop yields through the use of more soil and water conservation practices. With this idea, he has entered into agreement with the supervisors of the Duncan Valley Soil Conservation District. Technicians of the Soil Conservation Service working with the district have helped Campbell plan a complete conservation program for his farm.

In addition to conservation practices already being carried out, Campbell's plan provides for the relocation of an irrigation canal which passes through his farm, the regrading and lining of field irrigation ditches, installation of concrete headgates, and additional field leveling.

These improvements should enable Campbell to make the most effective use of his water and lead to even better crops.

Campbell says he would like a pond which he could stock with bluegills and bass, but he hasn't been able to find room for one on his 29 acres.

## PACIFIC

**MULCH SOAKED UP SNOW WATERS.**—In eastern Washington and northern Idaho the water went into the ground until the earth mantle underneath the snow became saturated and the surplus over and above that required to saturate the earth mantle caused serious erosion," writes George D. Clyde, chief, division of irrigation, Soil Conservation Service.

"Erosion was characterized by mud slides as well as by the ordinary type of gullying. In some areas telephone poles and fence posts actually were so unstable due to saturated soil that they fell over.

"In every instance through this area where the grain fields had been clean cultivated and no mulch left on the surface, the erosion was excessive. *Wherever stubble mulch was practiced and wherever there had been a litter left on the surface the water went into the ground and there remained sufficient stability to maintain the soil in place and no material surface erosion or mud sliding took place.*"



# COMPETE from COAST TO COAST

“**C**ONSERVATION of Our Soil Resources” is the subject of a \$15,000 essay contest for young men and women through 20 years of age. It is sponsored jointly by the National Grange and the American Plant Food Council. Closing date is June 15.

Judges are the Honorable Charles F. Brannan, Secretary of Agriculture, chairman; Dr. Hugh H. Bennett, chief, Soil Conservation Service; Mrs. Malcolm Byrnes, president, National Home Demonstration Council, Ethel, La.; Dr. W. T. Spanton, chief, Agricultural Education Service, U.S. Office of Education; and Dr. M. L. Wilson, Director of Extension Work.

Albert S. Goss, master of the National Grange, says, “By encouraging the youth of the Nation to become more concerned with the conservation and wise use of our soils, we are looking to farming’s future which will largely be the future of the Nation.”

Clifton A. Woodrum, president of the American Plant Food Council, explains, “The Council’s participation in this worth-while project is in keeping



with our support of sound agricultural programs designed to give greater emphasis to adequate land-management practices so essential in an economy of abundance.”

National prizes offered by the American Plant Food Council are: First, a nationally known four-door sedan; second, another nationally known four-door sedan; third, \$750 cash; fourth, \$250 cash.

Awards in Grange States: First, \$150; second, \$75; and third, \$50.

In States where the Grange is organized, entries are to be sent to the nearest subordinate Grange. In non-Grange States, participants are eligible only for national awards and should send their entries to the Conservation Committee, National Grange, 744 Jackson Place NW., Washington 6, D. C.

Contest judges explained that each entrant’s treatment of conservation principles “may be based on information from textbooks, bulletins, motion pictures, interviews, or personal experiences, but practical application of the subject to the land in the community, State, or Nation will be given special consideration in the judging of each paper.”

Entries must not exceed 800 words and will be judged on the basis of 55 points for effectiveness, 20 points for originality, 15 for practical application of subject matter, and 10 for grammatical correctness.



**U. S. SAVINGS BONDS.**—It is good business for a farmer to build up and maintain a financial reserve to meet emergencies. And a sound financial reserve plan helps maintain the farm conservation plan.

Dean W. I. Myers of Cornell University, chairman of the National Agricultural Savings Bonds Committee, puts it this way:

“Agriculture is a highly speculative business at best, and farm and ranch people need to have their financial reserves in the safest possible form and where they will always be readily available. Nothing meets these two requirements so well as U. S. Savings Bonds.”



A black and white photograph of a field with a winding path. Two people are visible in the distance, one standing and one crouching, possibly examining the soil or plants. The path leads from the foreground towards the background, curving to the right.

JULY 1949

# Soil Conservation

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE



# SOIL CONSERVATION •

CHARLES F. BRANNAN  
SECRETARY OF AGRICULTURE

HUGH H. BENNETT  
CHIEF, SOIL CONSERVATION SERVICE

ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE  
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JULY - 1949  
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## WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with approval of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

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25 percent discount on orders of 100 or more subscriptions  
mailed to a single address

**PRIORITY SYSTEM.**—In an effort to obtain maximum efficiency from technicians, district equipment, and operators, the Onondaga County Soil Conservation District at Syracuse, N. Y., has worked out the following priority: (1) *Groups* of applicants who agree to establish complete conservation farm plans; (2) *individual* applicants who agree to establish complete conservation farm plans; (3) *groups* of applicants who agree to establish a majority of the practices recommended and will consider the establishment of complete conservation farm plans, and (4) *individuals* who agree to establish a majority of the practices recommended and will consider the establishment of complete conservation farm plans. District technicians and equipment work more effectively with groups than with scattered individuals. More can be accomplished by working with those who are willing to establish a complete soil conservation program.

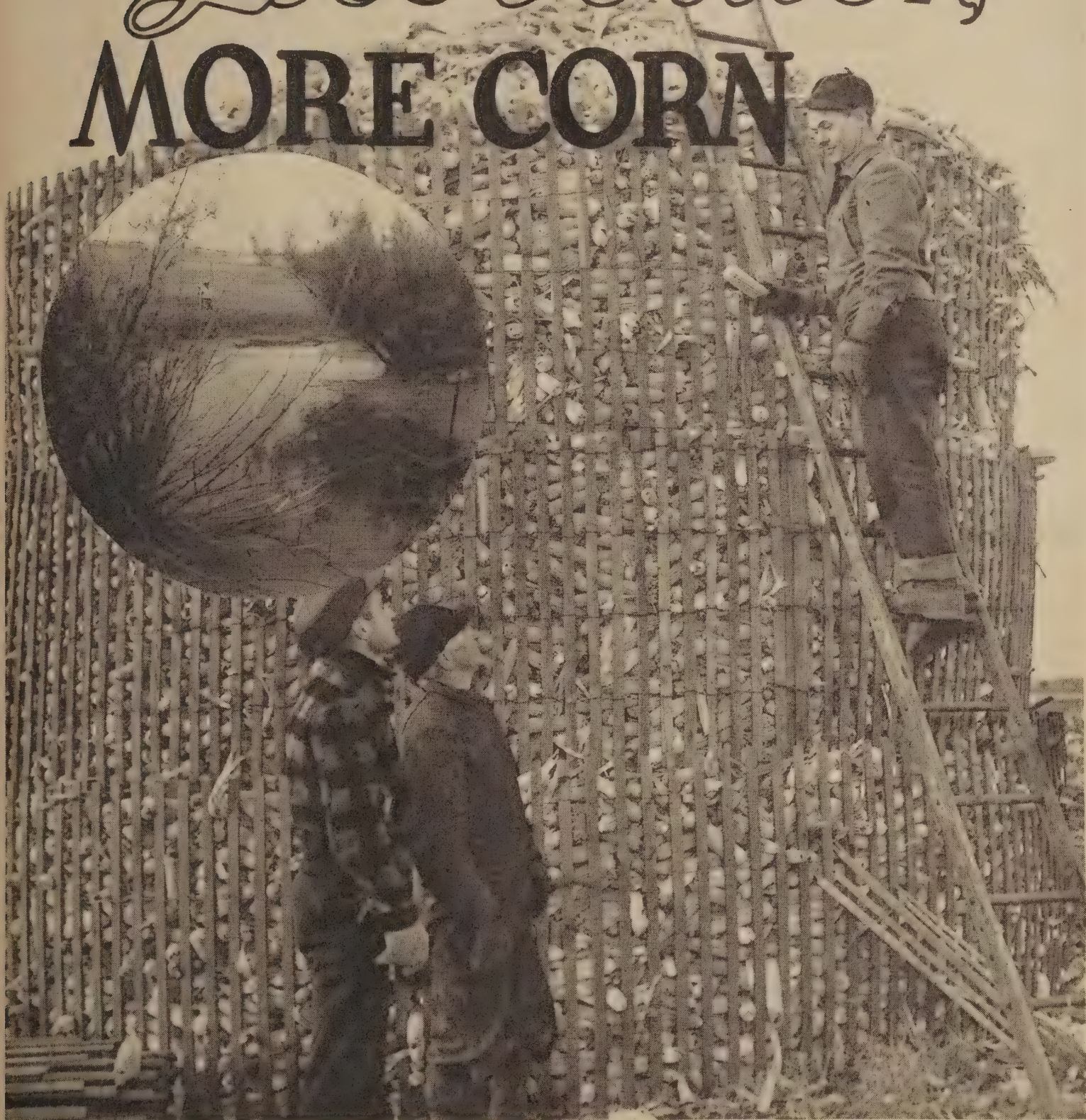


**FRONT COVER.**—Plowing under sweet-clover in the blossom stage. Corn will be planted here. The land is terraced, and planting is on the contour. This "shot" was made by B. C. McLean in 1948 on the Floyd Dotson farm in the Bourbon County Soil Conservation District, Kans.

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

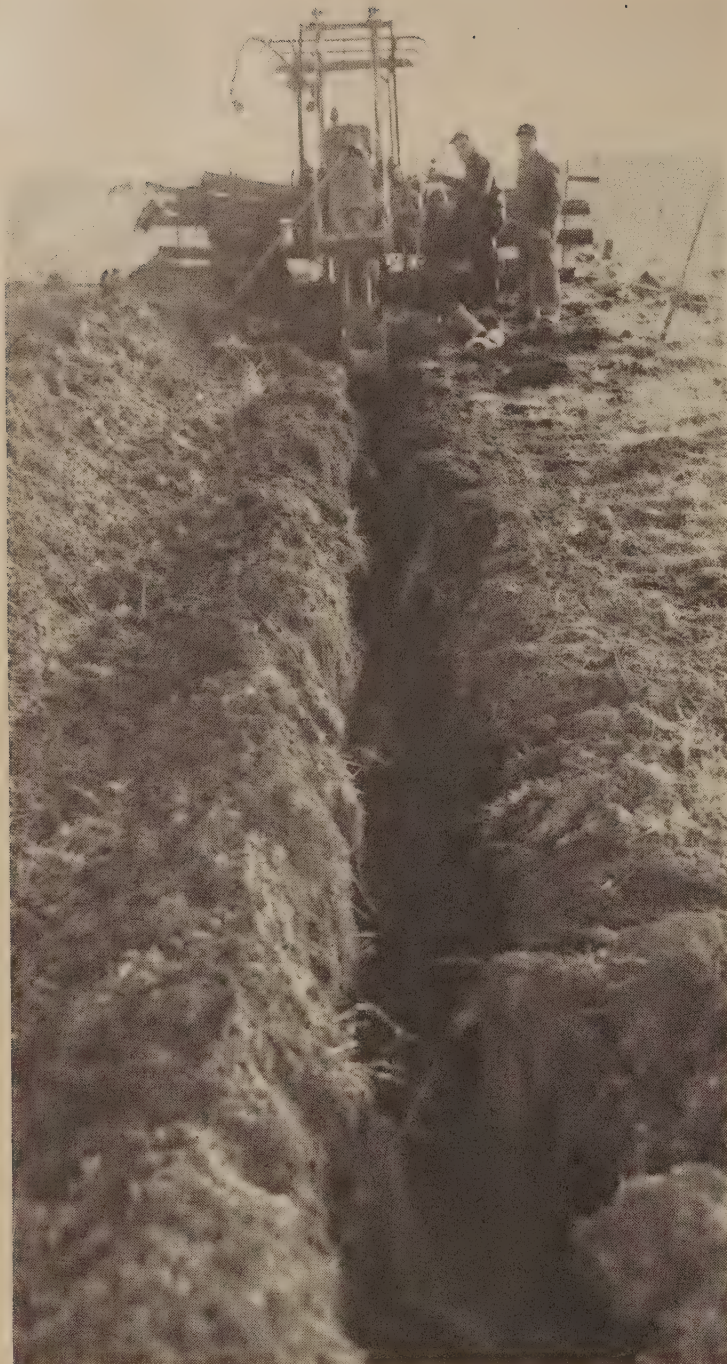


# *Less Water,* **MORE CORN**



First returns from drainage! Part of 30-bushels-per-acre yield from first field completed. Fred Spickler is on the ladder, Floyd Conger and Lyle Palmer on ground. The inset shows typical condition before problem was licked.





Hugh Neely checks work being done on his farm. This tiling machine (cost \$4,400) is owned and operated by farmer group. Neely is president.

By LYLE PALMER

A GROUP of enterprising farmers in the vicinity of Seward, Ill., in the Winnebago County Soil Conservation District watched the 1948 corn harvest with more than ordinary satisfaction. They are members of an association organized to promote drainage of hundreds of acres of marshy, unproductive land. Land which had made only poor pasture because of bog conditions, produced hundreds of bushels of corn.

NOTE.—The author is work unit conservationist, Rockford, Ill.

The project was started back in 1943 when a group of farmers headed by Hugh Neely decided that something ought to be done about the marshland they owned. A drainage system was the obvious answer, but there were so many different owners in this large area that one man could not do a successful job without the help of his neighbors.

Neely asked SCS technicians working in the Winnebago County Soil Conservation District to meet with 19 farmers in January 1944. They asked the district soil conservationist to make a survey to determine if drainage were possible and to estimate the cost of the job. The group met again a few weeks later and was informed that drainage was feasible on most of the farms.

Because some of the farms were not involved in the project and on others the cost ran too high, the group was pared down to 11 men who formed the Seward Mutual Drainage Association. Members worked up conservation programs for their farms with the soil conservation district, and technicians made a complete drainage plan.

The digging of the main ditch was done by the company which filed the lowest bid. SCS technicians did the staking and work began in June 1944. Two miles were completed that fall, and the spoil bank leveled, at a cost of over \$9,000.

The ditch was then ready to furnish an outlet for tile from the rest of the area. The plan called for tile from 4 to 12 inches in diameter. On a large acreage the tile lines are spaced at 80-foot intervals. According to Neely, the cost of this job, done by a private company, would have been at least \$2 a rod. This figure was regarded as too high. As a result, a tiling machine was purchased for \$4,400. With it the association members have been doing the work themselves for about 75 cents a rod. The ditcher, as the tiling machine is called, digs a trench about 1 foot wide and goes as deep as 5¾ feet. The depth the tile is laid depends upon the slope of the land and the fall contemplated.

Tile drainage was completed first on the Minnie Conger farm in the fall of 1945. Then came a year of suspended activity, when it was impossible to get tile because of wartime shortages. Up to now, the association has made productive 97 acres of former wasteland. On this land the yield of corn ran better than 80 bushels per acre last year. At present 80,000 feet of tile have been laid. The planned total for the 11 farms—over 650 acres—is

(Continued on page 279)

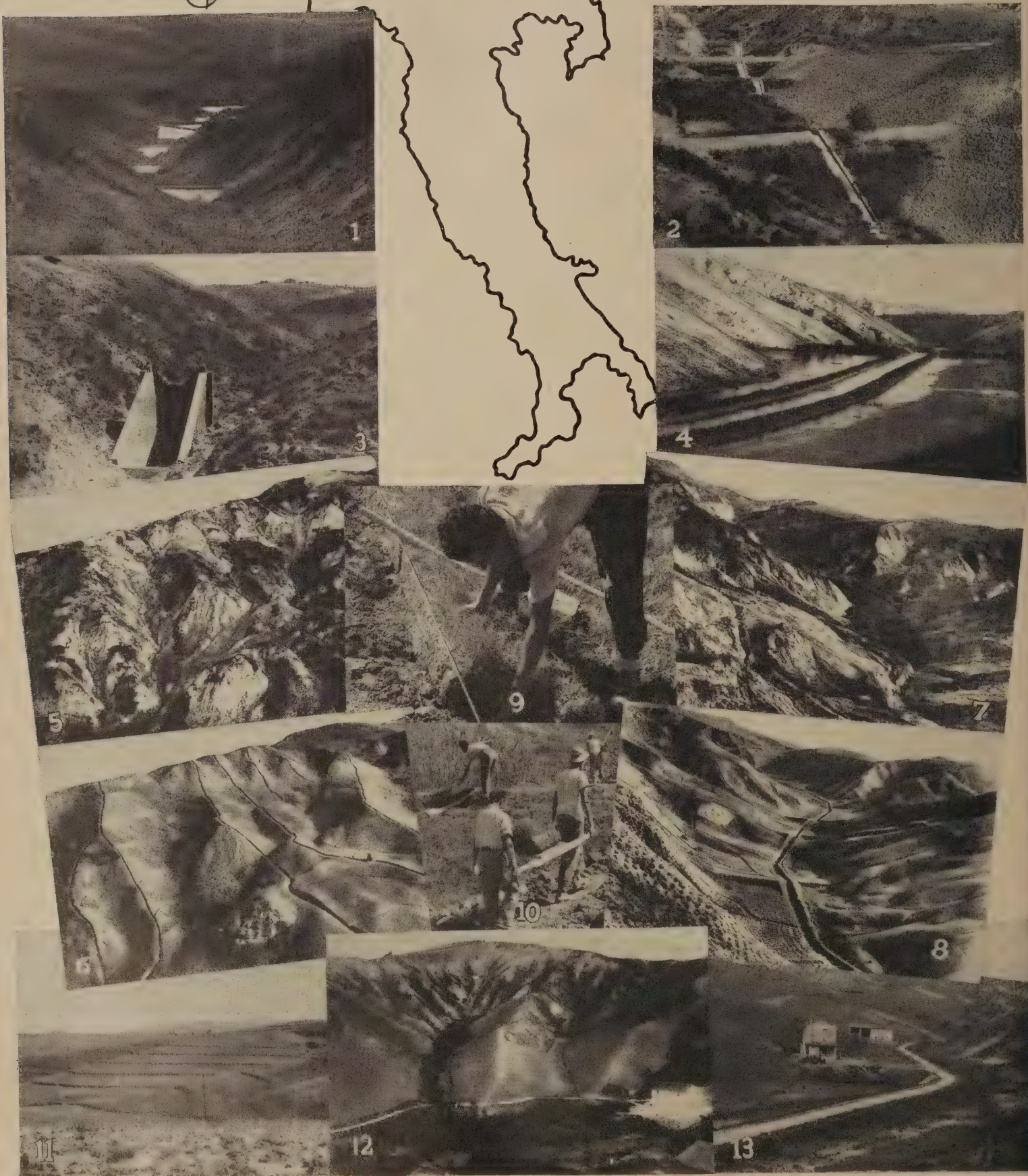




Sound technique constitutes the difference between success and failure in meeting drainage problems. Here we see Palmer and A. A. Hardin preparing to survey and stake out the tile lines so that the tile will have the proper fall. Palmer, Glen D. Greek and Perry M. Wilcox, working with the Winnebago County Soil Conservation District, surveyed and staked the 80,000 feet of tile already installed.



# Italy's Major Land Problem





**EDITOR'S NOTE.**—Augusto Alfani, who was graduated in Italy both in agronomy and in agricultural engineering, came some years ago to this country with a scholarship and took particular interest in the problems of soil conservation. On his return to Italy he did a great deal to publicize the achievements reached in this field in the United States and he has been called for the last 2 years to cooperate with the Food and Agricultural Organization in Rome.

In collaboration with the late Hugh G. Calkins, who also was an executive with FAO, he has written the article "Italy's Major Land Problem," which, because of its length, will be published in two sections. Part I appears this month. Part II will follow in the August issue.

This is an attempt by Mr. Alfani to work the other way round—to bring to America problems and achievements in the field of soil conservation in Italy.

---

1. View from upstream of a watershed unit of the Piaggia Torrent; the remodeling and control accomplished by the earth dams is evident. (Photo by Alfani.)

2. Same watershed as in 1, seen from downstream. Notice earth dams with tamarisk plantations and flume outlets of gravel covered with wire netting coated with cement. (Photo by Alfani.)

3. Masonry basin outlet built for an earth dam of the Brisighella Consortium. (Photo by Brisighella Mountain Basins Consortium.)

4. Siltations due to an earth dam. Water is already conveyed from an outlet to the one downstream by means of embankments. (Photo by Brisighella Mountain Basins Consortium.)

5 and 6. A zone of the Predappio Consortium (Forlì Province) before and after systemization practices have been supplied. Such practices are according to principles outlined for the Emilia Region. (Photos by Predappio Mountain Basins Consortium.)

7 and 8. Another zone of the Predappio Consortium, before and after systemization. (Photos by Predappio Mountain Basins Consortium.)

9. Sod is placed with accuracy where it is to grow. (Photo by Alfani.)

10. Sodding for control of earth dam with overflow crest in Val d' Era. (Photo by Alfani.)

11. Grassed benches on the contour, gently sloping (2.5 percent) toward the waterways, efficiently used at Spedaletto in Val d' Era.

12 and 13. Farm roads and farm buildings are indispensable for the application of a type of hydraulic reclamation, systemizations, and farm improvement. (Photos by Brisighella Mountain Basins Consortium.)

**A**GRICULTURAL Italy has a little more area and a somewhat larger population than industrial Great Britain. It is not so large as California—its climatic counterpart in North America—but has three or four times as many people. Lacking many of the raw materials required for industry, the Nation must continue to rely largely on agriculture for its existence. In the last 100 years the population has doubled. With 46 million people, and increasing at an accelerated rate, a way must be found to provide bread and work for these people and to place a solid foundation under a reborn structure of democracy. Italy's African colonies, already supporting indigenous populations and containing vast areas of desert, did not furnish the complete solution, nor, with many other countries in similar predicaments, can the answer be fully found in emigration.

Whatever other measures be undertaken, it is an inescapable fact that Italy's resources of soil, water, and forest—sadly depleted by centuries of heavy use—must be husbanded with the utmost care if the Nation is to survive. Her government, her scientists, and her farmers must strive valiantly together to make every acre, on a long-term sustained basis, produce the maximum of which it is capable.

Italy has a variegated climate and a wide range of soils. It has a few large and many small valleys which are highly productive, particularly where the necessary irrigation and drainage have been provided. But the pressure of population has been such that agriculture has invaded the hills and mountains that were once clothed with forests. Extensive areas had an underlying formation of clay, or of soft rock that weathers into clay. As the forests were destroyed and the remaining vegetation was removed by grazing and cultivation, the sandy, humus-bearing soil covering the slopes was gradually removed, exposing highly erodible clay surfaces. The landscape was cut into deep gullies and knife-like ridges. Huge quantities of soil were washed out, destroying farms, choking stream channels, and transforming fertile river deltas into swamps and lagoons. It is quite true, of course, that these clay soils constitute only a part of Italy's conservation problem, but they are of such outstanding importance that their story and the story of the work which has been done on them is well worth the telling.



The degradation of the clay lands is a geologic process which has been unwittingly accelerated by man, impelled by necessity to make a living from the soil. The process affects all the clay formations: Pliocene, Miopliocene, Miocene, Eocene; but the Pliocene, from the standpoint of damage and reclamation efforts, is the most important. Erosion has gained such momentum that man cannot hope to check it in the absolute sense. It has been demonstrated, however, that human ingenuity can use and modify natural forces in such ways as to provide tremendous benefits—not violently or suddenly, but slowly and painstakingly, taking strategic advantage of knowledge gained as the work proceeds. The jagged landscape must be shaped to fit human needs and the eroded material used to form new fields.

Cosimo Ridolfi, famed in the annals of Italian land conservation, said that *“la creta e’ come un avaro che tiene stretto in pugno il suo tesoro a cui, per toglierlo, occorre a forza aprirgli la mano.”* (The clay formation is like a miser who grasps his treasure tight in his fist; to take it away it is necessary to open the hand by force.) If the force is properly applied, the farmer, like the potter, can shape the clay for his own good and for prosperity.

### NATURE OF PROBLEM

A concept of the enormity of this particular problem may be gained from the facts, first, that about 65,000 square kilometers (25,000 square miles), 21.5 percent of Italy’s total land surface, are predominantly of clayey formation; second, that these formations are highly susceptible to destructive erosion; and, third, that 2,348 square kilometers (920 square miles) have already reached an advanced stage of erosion characterized by deep gullies, knife-like ridges, and steep-walled amphitheaters. This area is of record in scientific reports. If all the unrecorded bits and pieces were put together the total might be considerably larger. Year by year, new “bad lands” are being created. The clay lands, occurring at elevations from 60 to 700 meters above sea level, with average rainfalls of 600 to 1,300 millimeters (about 24 to 50 inches) and within ranges of temperatures adapted to crops, are definitely within the agricultural zones. Their conservation and management are complicated by the fact that much of the rainfall is concentrated in the late autumn and late winter months and that there are long dry periods during

the summer, making the land especially susceptible to erosion when the fall rains arrive.

Some of the characteristics of the soils are plasticity, which means they are converted into soft, sticky mud when wet; impermeability to water and air; and a strong tendency toward forming landslides. During wet periods vegetation has little chance to gain a foothold. During dry periods, wide cracks frequently occur. When the rains come, all the elements favorable to erosion are present. The water scours the gullies, forms rills on the slopes, enters the cracks and starts landslide action, and carries large quantities of soil in suspension. Very little water seeps into the soil; it races down the slopes and carries destruction in its path. The result, in the absence of control measures, is virtually complete break-down; an Arizona painted desert, done in toneless gray; an economic liability instead of a scenic asset. Fortunately, the picture is not always quite so bleak. The degree and rapidity of erosion are modified in localities where the slopes are not too steep or the rainfall too violent, where there is a good proportion of sand mixed with the clay, and where some of the original mantle of vegetation remains on the ground. Even under the most favorable conditions, however, the erosion control engineers, agronomists, and foresters are faced with a gigantic task: Rebuilding the ruins and preventing further destruction.

The troublous history of the clay lands and their destruction is not so clear as it might be. Historians have been prone to recount the wars, the progress of the arts, the political changes and the life of the cities, and to dismiss rather lightly the basic facts of agricultural development, however historically significant they might be. It can be confidently stated, nevertheless, that the Pliocenic clays were, in the main, covered with a humus-bearing layer of sandy soil and a mantle of forests. The inhabitants of the established towns and villages, often built on high hills for defensive purposes, cultivated the hills close to home. There, forests gave way to cultivation and the hills somewhat farther afield were closely grazed by domestic animals. Between 1000 and 1500 A. D. there were many wars between city republics and principalities and the natural balance was further upset by widespread burning of the forests and destruction of farming homesteads. It is entirely reasonable to suppose that many of the erosion problems inherited by the present generation originated dur-



ing that epoch, in which agricultural science did not share the upsurge of art and literature. In all probability the agricultural history of the other clay formations followed very closely that of the Pliocene.

In the old days the farmers, confronted by a land problem with which they were not able to cope, moved to new lands. Their former holdings, left without even the most primitive means of protection, unused except by grazing animals prone to destroy the remaining vegetation, were already prey to the forces of destruction. As time wore on and the population increased, farmers were forced to stay put and to see their lands and their livelihood ebbing away. Economically and socially, life became more complicated and difficult because not only were the hill farms destroyed but the resulting floods cut into river-valley farms and necessitated the building of expensive dikes—often of only temporary value. The silt carried to the river deltas and lower reaches created swamps and lagoons that put an end to farming and created a malaria menace to the health of the people. Present-day methods developed for using silt to build up agricultural land near river mouths, however costly, are a worth-while boon, but they can be effective in the long run only if flood flows are controlled by work extending over whole watersheds.

### THE BEGINNINGS

The necessity of soil conservation on hilly lands was recognized in Roman and even Etruscan times. Relics of stone terraces built in those ancient days are still to be found in Italy. Typical examples of this system, constantly maintained throughout many centuries, are to be found along the Italian Riviera, the shores of the northern lakes, the precipitous coast of the Gulf of Salerno around Amalfi, on the slopes of Mount Etna, and the stony lands of Tuscany.

Among the earliest records indicating recognition of the special problems of the clay lands are certain writings of Leonardo da Vinci, engineer, artist, and philosopher of the early sixteenth century, who proposed the use of methods which may be viewed as precursors of those now employed. It was not until the latter part of the eighteenth century, however, that a serious famine in Tuscany stirred the scientists of that day to devise ways and means of increasing production by extending agriculture to clay lands that had been neglected

or misused. Landeschi, a parish priest, started in 1770 a system of terraces with sodded banks in sandy soil. He was closely followed by Testaferrata who introduced improvements and variations applicable to clay lands. The real father of the modern technique, though, was Cosimo Ridolfi, agricultural scientist and proprietor of the villa of Meleto, who developed a system that, in a highly perfected state, is still in use. It follows very closely the principles laid down by Testaferrata.

Briefly, this system is adapted to the venerable traditions and commonsense practices of Tuscany, a region in which the production of wine and olives has long been of paramount importance. The vines and trees are planted in rows between narrow fields of cereal and forage crops. Having determined that hillsides must be kept intact by building a series of ditches nearly on the contour, it was necessary to introduce a modification in the form of short, straight lines in each row to accommodate the wires supporting the vines. The result has been a herring-bone pattern, with each ditch just above the vine-and-tree row. The ditches have just enough grade to carry the water off and allow the deposit of silt caught from the intervening fields. At intervals there are ditches on steeper grades, lined with sod, stone, or cement, which carry the surplus water to channels or catchment basins below. It should be understood that the herring-bone system cannot be employed on severely eroded clay lands until the slopes have been greatly smoothed out and moderated by a long and painstaking process. This consists primarily of building a series of small dams in each watercourse, starting at the bottom, and raising the dams as they become filled with the silt or mud washed down during rainy periods. At the same time the ridges are attacked by building ditches to accelerate erosion and hasten the filling of the dams, with the ultimate object of giving the whole terrain a shape which permits safe cultivation. At first glance, the deliberate use of induced erosion in a conservation project may seem incongruous. However, one has only to see the process in actual use to be convinced that it is logical and consistent. After all, the soil that is removed from the ridges is ultimately used for producing crops. Across every watercourse with enough width to permit farming operations there is built a series of low earth dams to impound the silt. When the process is completed and the soil has been given whatever



treatment it requires to make it productive, every catchment basin is a farmed field.

Cosimo Ridolfi, who is revered by the conservation-minded scientists of Italy for his splendid work and for the wealth of written material he left behind him, was born in 1794. By 1818 he had already published his ideas about the reclamation of Tuscany's wasted clay hills. In 1828 he put forth a completely charted plan for Meleto—in the fashion of today—and from that time until his death in 1865 he was continuously engaged in improving his property in accordance with the plan. Since his death the work has been continued without interruption by his family and descendants. Under the tenantry system of Tuscany (*Mezzadria*) that means not only that the land has been improved for its owners but also for more than 40 resident farm families.

Little by little, over a period of more than 100 years, the dream of Cosimo Ridolfi has become a reality. The work is not yet finished; there are still a few ragged banks to reclaim and a few little valleys to improve and make more fertile. Unlike other systems used in America and elsewhere, the Ridolfi method undertakes, not to stop all erosion, but to slow it down to the point where every particle of sediment that comes off a hillside can be used on more nearly level land below.

Ridolfi not only made *sistemazione* his life work but also, through his dynamic personality, inspired scientists, landowners, and practitioners to follow in his footsteps. Meleto was the model 100 years ago. Today it is a shining example of the almost-finished product.

Many other projects have been started and are now well on their way. Work at Cadiroggio in Emilia was started in 1860. In the same region an ambitious plan to improve the mountain basin of Brisighella was tentatively inaugurated in 1909, gradually gaining momentum until it became a full-fledged project in 1922. Except for the war years, it has been continuously prosecuted ever since and now makes an impressive showing. Later, extensive works which are still active were started in Val d'Era and Val d'Orcia. Other projects in clay areas have been undertaken in the region of Marche and elsewhere. In each case, advantage has been taken of experience as well as of new scientific developments. Modifications of the system have been adopted to fit local conditions, which are never the same in any two areas. It is also necessary to vary the methods to suit

the demands of the local economy and the prevailing types of agriculture. One of the most interesting developments is at Brolio in the region made famous by Chianti wine. Here the Ridolfi system has been adapted to grape and olive culture on hills so rocky that the casual observer would be inclined to dismiss them as fit for nothing except a scrubby growth of woods.

## ORGANIZATION

Reclamation and *sistemazione* of land and water supplies are undertaken by associations of farmers known as *ConSORZI*, very much like the cooperatives in certain other countries. Each *ConSORZI* may have on its staff such agronomists and engineers as may be required to plan and supervise the work. No direct control is exercised by the central government but government funds may be allotted to supplement funds contributed by the members. The word "reclamation" in its broadest sense is expressed by the term "*bonifica*" or "*bonifica integrale*," which means doing all the things in an area, usually a watershed, which need to be done in order to make the land productive—erosion and torrent control, systemization of fields, pasture improvement, and reforestation—and to harness the water supplies for irrigation, flood control, and sometimes water power. This comprehensive program received considerable impetus 25 years ago but progress was interrupted by the war. Under the handicap of reduced budgets and greatly increased costs, it has been resumed. Active *bonifica* programs are under way now in Val d'Era, Val d'Orcia, Brisighella, and a number of other areas in various parts of Italy.

Besides land and water operations, the plan generally contemplates building a network of roads to make all farms accessible to market and houses for settlers on reclaimed portions of the area, as well as the provision of water supplies, schools, and other essential services.

## CONSERVATION METHODS IN BRIEF

The logic of control methods used may be more readily appreciated if it is realized that the clay ridges, cliffs, and banks have no soil profile—no topsoil, no subsoil, no bedrock in the usual sense. The formation is actually an extremely soft rock of great depth, usually with thin strata of sandy material. It weathers into clay or mud immediately upon exposure to the air and when the mantle of vegetation is removed is highly subject



to erosion. Briefly, the objectives of the treatment are to arrest the destructive processes, to remodel the slopes, and to make the soil permanently fit for agricultural use.

The measures commonly used are:

1. To eliminate destructive flows and landslides by guiding the water in ditches built according to plan.
2. To stabilize the watercourses by the construction of dams designed to regulate the flow and cause the deposit of soil carried in suspension.
3. To remodel the slopes, achieving an "angle of repose" which permits cultivation.

The first measure is a preliminary to make the others possible. The second is started before the third, or contemporaneously with it. It generally starts with the building of a dam near the junction of the watercourse and the valley to insure rapid filling. The construction of the other dams proceeds upstream, and filling is often hastened by the process of remodeling the slopes. The lower dams frequently result in the formation of small fields suitable for farming. The process is not complete, however, until the slopes have been properly shaped. Sometimes the dams are raised several times to catch all of the silt. The third measure is accomplished by blasting to break down large masses of material and by hydraulic action: running rain water in ditches down the crests of small ridges to start the remodeling process and carry the surplus material to catch basins below. Ditches may also be built for this purpose across the slopes at various angles. After the rainy season, the process of rounding off the slopes and bringing them to a suitable grade is completed by hand work and ox teams. Heavy machinery, which might be used effectively in many instances, is usually not available. The action of the water, although it can properly be termed induced and guided erosion, has the special value of washing colloids and excess salts out of the soil and causing the deposit of the elements fit for tillage. From personal observation it can be stated that in some cases remodeled and tilled slopes up to 25 percent show very little erosion from rains of considerable duration and intensity, provided that drainage ditches or furrows have been properly installed. When the work is completed, the fields themselves may assume various forms, such as those divided by permanent ditches and tree rows at Meleto, gently sloping earth terraces at Volterra, or rounded "angle of repose" slopes at Brisighella.

# PRIZE MONEY PUT TO WORK

By FRANK H. MENDELL

FOR THE past 4 years, winners of the *Omaha World-Herald* contest have snowballed their winnings by reinvesting them in equipment and other measures to increase the amount of soil conservation being applied in their Iowa districts.



Don Anderson discussing grassland farming with Harry and Carl Anderson at the Field Day.

This was true of the Page and Mills Soil Conservation Districts which won in 1945, the Harrison and Montgomery Districts in 1946, the West Pottawattamie and Carroll Districts which walked off with the honors in 1947, and the Taylor and Shelby Districts which won last year.

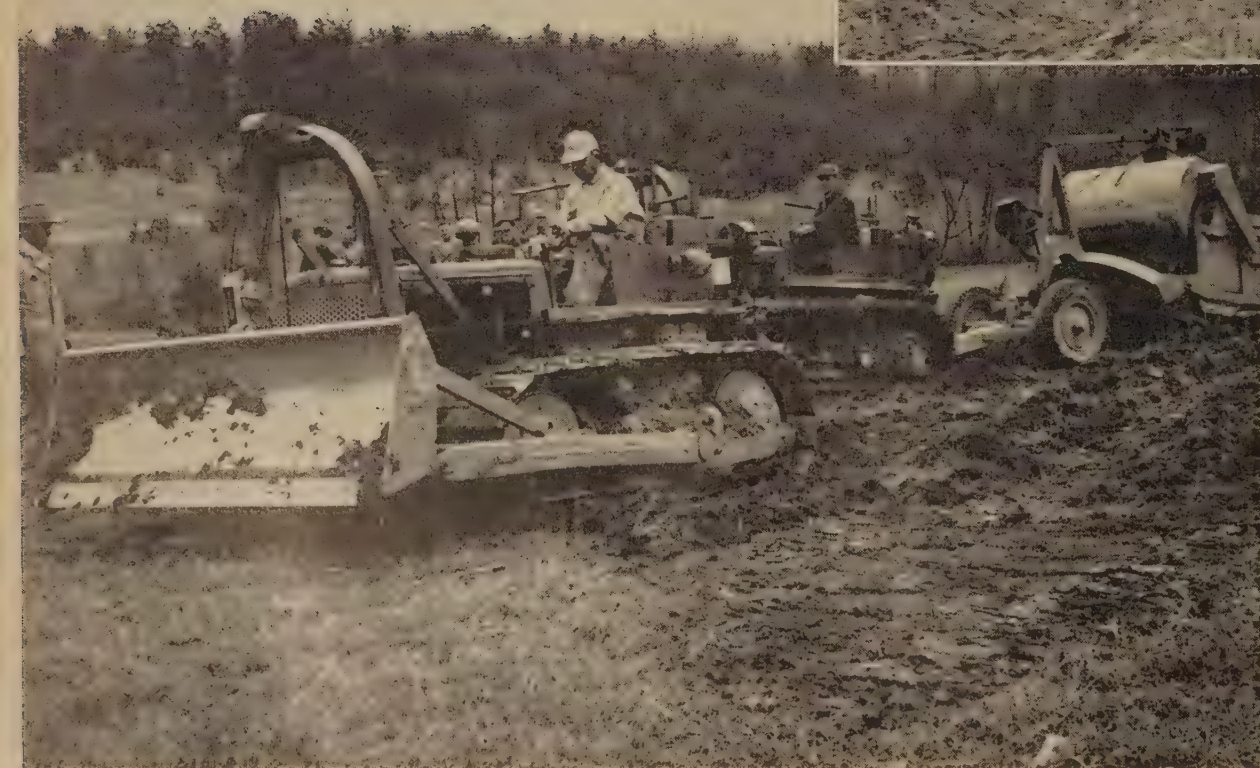
When the Page district commissioners received their check for \$500 they went into partnership with Richard Ratliff and purchased a tractor and attachments to do terracing work. This partnership was dissolved in the fall of 1948 with the expenses all paid up and the district commissioners reporting a net worth of \$2,416.22. This equipment resulted in more terraces and terraces of better quality.

In addition, the Page district commissioners purchased 60 copies of the book "The Land Renewed," by William R. Van Dersal, for rural schools, offered prizes for conservation scrapbook

NOTE.—The author is State conservationist, Soil Conservation Service, Ames, Iowa.

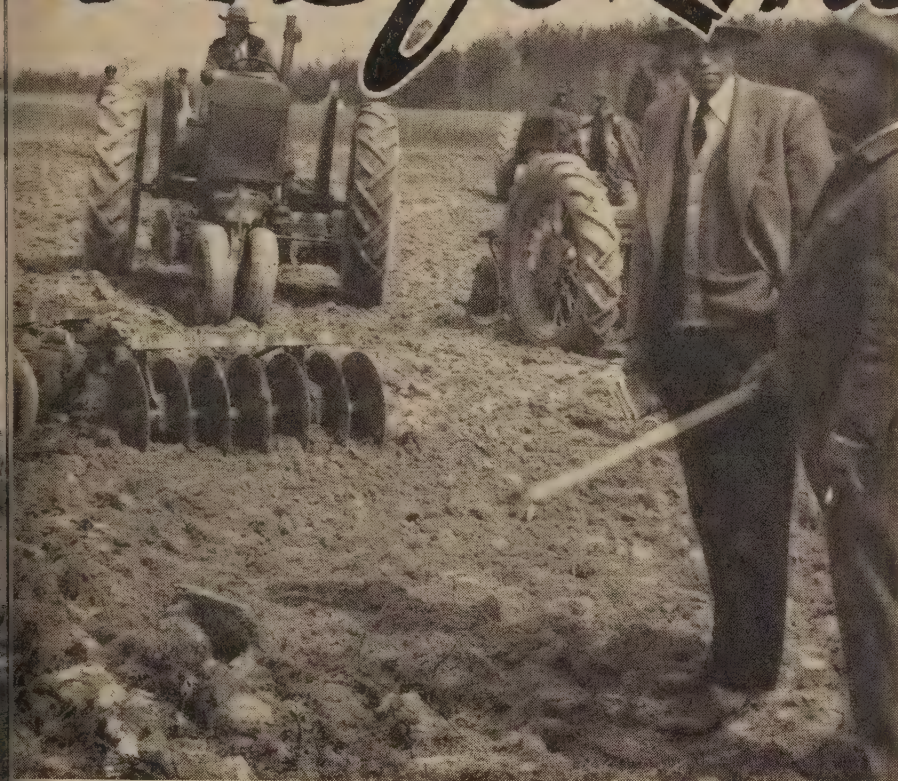
(Continued on page 278)







# Transformation!



## ON-THE-SPOT PICTURES.

Top, left: Oddie Torain smiles broadly as State Soil Conservationist Earl B. Garrett (at left) outlines face-lifting job. Looking on is District Extension Agent J. W. Jeffried. In background is a tractor used in demonstration, Torain's house, part of the crowd.

Top, right: In foreground are Frank V. Duffy, soil conservationist, and J. C. Hubbard, county agent, shown helping direct the huge job.

Center: Duffy and R. L. Mohler, another soil conservationist, prepare to survey additional acres for conservation treatment during demonstration.

Bottom, left: Bulldozers and earth-mover help telescope 5 years' conservation job into single day's activity.

Bottom, right: One of 20 tractors on site here disks a seedbed in preparation for planting alfalfa.

## By SHERMAN BRISCOE

**M**OST Orange County, N. C., colored farmers en route to town now bring their cars to a halt at Oddie Torain's farm to observe the model soil and water conservation practices.

Torain's 107-acre farm was face-lifted last March in a giant demonstration sponsored by Orange County colored farmers in cooperation with the Neuse River Soil Conservation District. Federal and State agencies and several local business firms assisted in the project.

The demonstration, first of its kind to be conducted on a Negro's farm, included planting trees, building terraces, establishing contours and strip cropping, liming and seeding a pasture to alfalfa, healing gullies, and seeding border areas along the road to sericea lespedeza. A poultry house was built, and the home was repaired, modernized somewhat, and painted.

Torain's farm was selected because it is favorably situated on one of the main roads to Mebane and Hillsboro and because the conservation practices needed were typical of those needed on most other farms in the county. The quality of the



NOTE.—The author is information specialist, USDA, Washington, D. C.



farmer himself was a factor, too; conservation practices, no matter how well they are established, must be maintained.

Until a few months ago, the 29-year-old Purple Heart veteran had been a share cropper, but he had demonstrated real farming ability. Despite the fact that his parents were share croppers, he was one of the outstanding colored 4-H members in his county for 7 years, and was the first to plant hybrid corn.

As a 4-H Club member, he used to tell his 25 sisters and brothers that some day he was going to have a piece of land of his own. The war and a 3-year tour of duty with the Ninety-second Division interrupted his plans. But when the war was over, Torain came home, married, and began working toward that farm of his own. He and wife saved part of their share-cropper earnings and kept their eyes open for a good buy. Last fall they found the farm they wanted, dug deep into their savings, and made the down payment. They moved in last January.

Then came the face-lifting demonstration, 2 months later. With 2,000 farm people looking on, while another hundred operated tractors, lime spreaders, seed drills, bulldozers, and other pieces of equipment, Farmer Torain ventured to a neighbor, "If I'm dreaming, please don't wake me up."

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## PRIZE MONEY

(Continued from page 275)

contests, and provided the district with stationery, postage stamps, and other incidentals.

The Harrison district commissioners also decided to purchase terracing equipment. They later sold it when contractors became available to meet the farm needs. They not only paid for the equipment but accrued about \$1,100 in the treasury. An investment was made also in a 35-millimeter camera. Awards were provided for conservation work in the rural schools, stationery and stamps purchased, and dinners given to local co-operators and district personnel. These contributions were estimated at about \$600.

The Mills district commissioners used their reward money for a used aerial camera, hand levels, fertilizer for plot studies, and the publishing of the annual report.

The West Pottawattamie Soil Conservation District has purchased a 35-millimeter camera and

plans to buy some terracing equipment if it is needed.

The Montgomery District purchased a copy of "The Land Renewed" for every rural school. Commissioners are now considering the purchase of slide and film-strip projectors for use of rural schools.

The Carroll commissioners purchased a whirlwind terracer last year and swelled its treasury by \$150.

The Taylor and Shelby commissioners are considering the purchase of a cultipacker seeder to demonstrate the use of this type of equipment which is not now available in southwest Iowa. Other projects being studied include materials for use in schools, soil-testing equipment, and seed production of improved grasses and legumes.

Perhaps the outstanding feature of the *World-Herald* program is the recognition banquets in winning districts. Three farmers in each district, their wives and children, landlords and tenants, are honored for the recognition they have brought to their soil conservation district. Corsages for the ladies, flowers for the tables, miscellaneous entertainment and a good speaker make these events memorable.

Iowa has 15 soil conservation districts which are in the newspaper's territory and therefore eligible to compete. Each year participation has been virtually 100 percent.

Commissioners select three farmer cooperators to represent the district. If the district wins, the individual farmers receive certificates and are honored as outstanding soil conservation operators. The district receives \$500 in cash and a plaque.

Judging is done on a score-card system. Points are assigned for proper land use; needed conservation measures adopted; crop rotations according to soil type, slope and erosion; quality of work accomplished; and leadership in getting others to adopt soil conservation. The cost of applying the program is also credited.

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**THIS IS CONSERVATION, TOO.**—Farmers now receive \$140,000,000 a year in earnings of their United States Savings Bonds. This sum is the farmers' share of the interest on the national debt. Widespread ownership of Savings Bonds makes for stability of the general economy, as well as added protection of millions of farm people in the ownership of their homes and the maintenance of their land resources.



# MORE CORN

(Continued from page 268)

330,000 feet. That means about one-fourth of the project has been completed.

Neely reports that next year, with tile and labor more plentiful, the group hopes to finish a large part of the job. Up to now the only outside help has been furnished by Wayne Sass, a neighboring farmer, who has operated the machine on a part-time basis. Sass has made arrangements to operate the machine full-time next year.

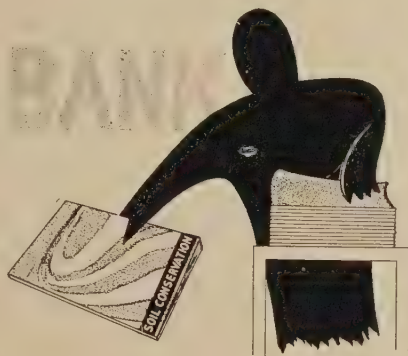
Members of the association have been more than satisfied with the work done and with corn yields, according to Hugh Neely. Besides Hugh, the membership includes Roy S. Neely, Winnifred Neely, C. E. Comly, John H. Neely, W. C. Neely, Robert Smith, Wilma Engdahl, Homer Green, Mrs. Conger, and Reint Poppen.

When the job is finished, the owners will probably sell the tiling machine. At present prices, the work is costing about \$100 per acre.

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## NORTHEAST

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**BANKS GIVE MAGAZINE.**—The chairman of the agricultural committee of the State Bankers Association of West Virginia has recommended that the 150 banks in the Association cooperate with their local soil conservation districts to provide a year's subscription to the *SOIL CONSERVATION* Magazine to each new cooperator, and to as many of the old cooperators as possible. One of the districts—Potomac Valley—already is giving the magazine to 150 cooperators.

**BERRY OUTLOOK BRIGHTENS.**—Ben Fleet, a blueberry grower in East Sandwich, Mass., has just finished an advance of 10 years in his farm industry, all in 1 year. It came about as the result of land use information supplied to him by SCS technicians with his complete farm plan. "This information advanced me at least 10 years in my blueberry enterprise. It would have taken me at least that long to gain the information they gave to me, because it would have had to be obtained by trial and error. Aside from land use information, the locating and designing of drainage ditches and information on land clearing methods were very helpful," says Fleet.

**POWERFUL LOT OF PLANTING.**—More than a quarter million trees and shrubs will be planted, starting in mid-April, on farms of 110 cooperators in the Oneida County (N. Y.) Soil Conservation District. Cooperators will plant 160,000. The remaining 100,000 will be planted by crews from the Fish and Game Division of the State Conservation Department at a cost to farmers of \$7.50 per acre. Last year 66,000 trees and shrubs were planted on Oneida District cooperators' farms.

**COULDN'T WAIT.**—Harold Ochs, Readington Township farmer near Flemington, N. J., had a complete conservation farming plan, and he wanted to put it to work. He didn't have a tractor and his prospects for getting one were no nearer than next spring. However, he did have two Percherons and a walking plow, so he took the team and the plow and went out and built 900 feet of diversion terrace on one of his fields in 3½ days, without cash outlay. Jesse Denton, technician with the Mid-Jersey District, helped him.

"Erosion just didn't seem to be waiting for better opportunities to attack my topsoil and steal more of it away," Ochs says in explaining why he didn't wait until spring when he would have had his tractor. When the tractor does arrive he'll be ready to install more practices in other fields where gully and sheet erosion are taking large tolls. He expects to have all practices fully installed in less than 5 years, and he'll do most of the work with his own equipment—the tractor and machinery he has on the farm right now. In Hunterdon, Ochs' home county, there are 199 other farmers who have complete conservation plans.

**CORN ON CONTOUR.**—Right when Carl Haischer, work unit conservationist in the Upper Ohio Soil Conservation District, was getting ready to organize a Pleasants County "hundred bushel" club as an incentive for corn growers, along came John Ross, a district cooperator, with a yield of more than 130 bushels per acre.

That's big news in West Virginia corn-growing circles. Contour farming enabled Ross to get top values out of soil, water, seed, manure, and fertilizer. On less than ¾ acre of soil, using U. S. 13 (hybrid) seed, 8 loads of manure, and 500 pounds of 4-12-4 fertilizer, he raised an even 100 bushels of shelled corn.

In addition to saving soil through erosion control, contouring let all the rainfall soak into the ground right down around the roots of the corn, and then kept the corn growing during the later hot and dry periods when corn normally stands still or wilts. Ross says growing corn on the contour lightens the labor load by making it possible to plow, plant, and cultivate less ground, and still get a larger yield.

**CONTRACTORS WERE GUESTS.**—Supervisors of the three Worcester, Mass., soil conservation districts strengthened their teamwork with farm contractors when they were hosts at a get-together. Nearly 50 contractors, operators, and SCS workers attended. The program started with movies, followed by a short talk in which it was emphasized that districts are not in the farm machinery business and that their leaders believe contractors can be mighty helpful in getting more conservation practices on the land. There was joint discussion of points involving use of specific machines in land clearing, such as what size is best and on such debatable issues as grubber blades versus straight blades. Also considered, was a 5-percent rebate to the district treasurer.

When it came time for "eats"—coffee and doughnuts—the group was joined by members of the Worcester County Vegetable Growers Association, which had been meeting nearby.





# Rice Hulls for Seeding

Seeding forage mixtures with a grain drill, using rice hulls to hold together seeds of different sizes, shapes, and weights. This beats broadcasting. Drilling is simplified, and better stands result.

By WILLIAM L. SOUTHWORTH

**T**HE lowly rice hull, long considered a waste product of little commercial value, appears headed for a modest share of fame. It apparently holds the answer to one of the farmers' oldest and most vexing problems—how to sow mixtures of different kinds of seeds in a single operation and get uniform distribution of all seeds regardless of variations in size, shape, or weight.

Discovery of the unique virtues of rice hulls was made by the Soil Conservation Service nursery at Pleasanton, Calif. It resulted from the problem of seeding mixtures of many of the new conservation forage grasses developed by the nursery.

Most of the trouble arose from the difficulty of calibrating grain drills to sow the right amounts of differing kinds of seeds recommended for planting mixtures. Too often the small and relatively heavy seeds rushed out of the drill spouts, leaving the lighter, fluffier ones behind. This resulted in

spotty, uneven stands which defeated the purpose of the mixtures.

Knowing that seeding difficulties would doom widespread use of new mixtures badly needed to protect and improve California's range lands, O. K. Hoglund, agronomist at the Pleasanton Nursery, determined to find a practical solution. From experiments conducted at San Fernando by Dr. A. L. Hafenrichter and Paul Lemmon, he was convinced that the answer lay in adding a carrier or "dilutent" to hold various seed mixtures together. Hafenrichter and Lemmon had found varying degrees of success with bran, sawdust, cracked barley, and various other carriers.

Hoglund tried them all, including sand. None was completely satisfactory. Sand was impractical; it left the light, fluffy seeds behind. Furthermore, it usually had to be dried before it could be used, and frequently it contained objectionable foreign matter. Sand was also damaging to the drills because of its abrasive action on moving parts. Sawdust was not dependable; small chips or sticks clogged the drill and it had a

NOTE.—The author is information specialist, Soil Conservation Service, Portland, Oreg.





The magnified close-up reveals careful cupping of round, black seeds of subterranean clover, the burr-like seeds of burnet, the barely distinguishable seeds of Harding grass. At our left we look at one of the first field seedings in California where rice hulls were used; part of a 30-acre field on the L. Z. Mitchell ranch near Corning, which was seeded with a grain drill in the fall of 1947. Above, an examination is made to check on the thoroughness of mixing.

tendency to form a "bridge" over drill-spout openings when the least bit moist. Cracked barley showed the most promise but it was expensive.

More out of desperation than hope, Hoglund tried adding liberal quantities of rice hulls to various mixtures. The results startled him. Each hull acted as a tiny cup which held small clusters of the different seeds in the mixture. Those not trapped in the cups, seemed to "float" in the small spaces between the hulls as if held by millions of invisible little hands. Fed through a grain drill, set for seeding barley at the rate of 160 pounds per acre, the seeds and rice hulls came through in almost precise proportion to the rates of mixture. It made no difference whether the seeds were large or small, heavy or light, they were

all distributed uniformly by the rice hulls.

Hopeful but not wholly convinced, Hoglund resorted to a mechanical seed cleaner and separator. No amount of cleaning could separate more than 50 percent of the seeds from their possessive rice hulls.

Hoglund made his discovery in the fall of 1947. The first field planting with rice hulls in their new role was made on the L. Z. Mitchell ranch near Corning, Calif., in October of that year. Thirty acres were seeded to a mixture of Harding grass, burnet, and subterranean clover—seeds having widely different sizes, shapes, and weights. The result was a vigorous, even stand of high-yielding forage. The uniform growth of all plants, now in evidence 18 months later, lends powerful sv



port to Hoglund's conviction that rice hulls may eventually revolutionize the method of sowing small-seeded forage mixtures.

Further support comes from Graham Nissen, a director of the Eastern Alameda County Soil Conservation District and copartner in the Nissen-Engblom farming and livestock enterprise. "Two years ago," says Nissen, "we broadcast-seeded an acre and a half to a mixture of alfalfa, orchard grass, Ladino, trefoil, and rye. The Ladino and trefoil failed to appear and the entire seeding was spotty. Later we seeded 10 acres with a grain drill and used rice hulls to hold the various seeds together. We got an almost perfect and uniform stand. I have just finished mixing up a batch of seeds and rice hulls for another 45 acres that we'll seed this spring as soon as the weather is right."

Like numerous other California ranchers, Nissen believes that drilling is far superior to the old broadcast methods. "Drilling, with rice hulls," he says, "is the most efficient, easiest, and cheapest method I know for seeding forage mixtures."

There is little to the job of mixing seeds and rice hulls prior to putting them in the drill box. "All you have to do," says Hoglund, "is spread a 6-bushel sack of rice hulls on a tarpaulin or clean floor to a depth of 6 inches or more. Weigh out the proper quantities of the various seeds and scatter them over the hulls fairly evenly. Then mix together with a shovel. Set the grain drill for 160 pounds of barley per acre, place the mixture of seeds and rice hulls in the drill box, and you are ready to go."

From experience, officials at the Pleasanton Nursery have found that the most efficient rate for small-seeded grasses and legumes is about 16 pounds, or 2 bushels, of hulls per acre.

Rice hulls and seeds can be mixed in considerable quantity and stored in bags for later use. There is no danger of seed separation regardless of the amount of handling. Because of their bulk, however, one sack of rice hulls, about 6 bushels, is all that can be handled efficiently at one mixing. Larger quantities make it difficult to get even distribution of seeds through the hulls.

The advantages of using rice hulls for seeding forage mixtures with a grain drill are numerous. Most important is the even distribution of all seeds and the uniform forage stands that result. The simplicity of the process is a strong talking point. Anyone familiar with a grain drill can make the proper drill settings and forget all worry as to

seeding rates. Exacting and time-consuming drill calibration, at best a job for an expert, is a thing of the past. A single drill setting does the entire job. Farmers can also forget grass seeding attachments; the rice hulls and seed all go in the grain compartment together. Seeds of all kinds, sizes, shapes, and weights can be used with rice hulls. In sowing mixtures which include large seeds, such as vetch or bigger, the volume of rice hulls should be reduced by about one-half the total volume of the large seeds. Rice hulls work equally as well with alfalfa hay seedings as with grass-legume mixtures.

Rice hulls will keep almost indefinitely. They can be purchased in quantity and stored over a period of many years. They are clean and feed readily through a grain drill with no danger of clogging or "bridging." Moisture has little effect on the hulls. They are tough, elastic, and decompose very slowly.

Rice hulls are plentiful in California where, until recently, they were considered a waste product and consigned to the bonfire. A few processing mills in the past have developed a small commercial market for the hulls as poultry bedding and now ship them in limited quantities to certain parts of the country. Because of their bulk, which increases shipping costs, and the relatively light demand for them, rice hulls are usually scarce except in rice-producing areas. The supply, however, is more than adequate to meet any demand that might result from their use in seeding forage mixtures, according to California authorities.

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## SOUTHEAST

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**WHY PLANT ROW CROPS?**—Clifton Welch, of the Simpson County Soil Conservation District, Miss., asks, "Why plant row crops at all when you can grow oats for winter grazing and for grain in late spring, followed by lespedeza for summer grazing or hay, the first year, and grazing plus seed and cover to turn under the second year. This not only controls erosion and increases farm income, but makes it possible to handle more acres and cattle. I am completely out of row crops now."

**EVERY FARMER NEEDS ONE.**—When Walter Myers, war veteran, bought an 85-acre farm in the Bullitt County Soil Conservation District, Ky., he went to the supervisors for advice on how to stop erosion in one of the fields. The SCS technician and one of the supervisors, B. F. Robards, visited the farm. They pointed out to Myers that the field was not suited to row crops, but would be excellent for alfalfa or orchard grass and should be terraced. After the terraces were constructed, he decided on a complete farm plan. He thought so much of the plan that he commented, "I don't see why every farmer doesn't get a plan like this. Why, with this plan, I can tell what land needs lime and phosphate, how much to apply, and where to plant row crops."



**WINTER GRAZING BEST.**—Glen Tullos, of the Rials Community, a cooperator in the Simpson County Soil Conservation District of Mississippi, says winter grazing is the solution to winter feeding for beef cattle. They will gain more pounds per acre grazing in winter on the same acreage, than in summer he contends.

**EVERYBODY LIKES IT.**—Supervisors of the Piedmont Soil Conservation District, Ala., report that they "laughed at themselves" at a recent meeting when they recalled how timidly they started carrying out their farm plans 10 years ago. "In the first place," they note, "about all we agreed to do, and really meant to do, was to set out some kudzu on our rougher land. The idea that it was better to put most of our land in thick-growing, erosion-resisting crops never occurred to us. If it had, we would have thought we couldn't make a living that way. Well, we were taught a lesson by what happened to our old rough land. We set it to kudzu and in a few years it was producing more feed than any other land on the farm. We began to wonder, if that sorry old land would produce more feed, what would happen on our better land?"

"We began inching out on the better land. Here's what happened. In 10 years we put thick-growing crops on 200,000 acres of land where such crops were not grown before. That's nearly one-third of our open land. We had a little before we started, mainly in pastures. Who ever heard of a farm 10 years ago that did not have any cultivated crops? We have many such farms today. The owners report that they are producing more food than ever before.

"Another thing, 10 years ago if we had started out to grow feed for a cow it would have been about like this: A few acres of summer pasture, a few acres of soybeans, and a little grain of some kind. Who would think of feeding a cow that way today, even if there were no soil erosion? We have found out the only way to feed cows is to let them graze on erosion-resisting, thick-growing crops. Crops like that require little land preparation and no cultivation at all. The cows like it better. The land likes it better. We like it better."

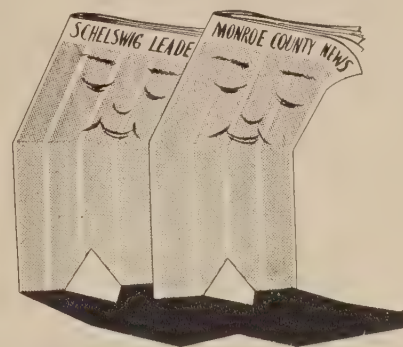
**PLAN WORTH \$4,600.**—Alden McNair, of the Hinds County (Miss.) Soil Conservation District, bought a farm in 1937 for \$2,300 and sold it in 1938 for \$11,500. He estimates that at least 50 percent of the increase in the value of the farm was due to his application of soil conservation practices.

**44 MILES.**—Five community drainage projects in the Black Belt Soil Conservation District, Ala., completed 9 miles of drainage channels in 1948 with draglines, and 35 miles of lateral ditches with drag pans. A dragline lent to the district by the Soil Conservation Service stimulated interest among landowners to the extent that it was necessary to call in private operators to take care of the demand for drainage.

**THANK YOU, SIR.**—R. B. Kelly, beef-cattle farmer near Sylacauga, in Talladega County, Ala., expresses his opinion of the soil conservation program in his county by saying, "I like the term 'work unit' on the door of the Soil Conservation Service office. I think that term is very appropriate to Soil Conservation Service workers."

**LIKES CROOKED ROWS.**—Rupert Watson, cooperator with the Grayson County (Ky.) Soil Conservation District, says that he didn't like crooked rows at first because his horses had to walk on rows of corn in turning short corners. "But when I gathered my corn and saw how much my yields increased, I liked them. Now, I know how to keep from having such short turns. Next year I'll plant more short rows out in the field instead of trying to make those short turns in the longer rows."

## UPPER MISSISSIPPI



**CONSERVATION OSCARS.**—The *Monroe County* (Iowa) *News* was cited for service in the field of conservation at the 1949 convention of the Iowa Press Association in Des Moines.

The recognition, and a plaque, came to the *News* from the Iowa Conservation Commission.

Two Service to Conservation awards were made by the State Commission. The *News* won in Class I, for communities over 1,400 population. Class II honors went to the *Schleswig Leader*.

**STAMP OF APPROVAL.**—The Michigan State Soil Conservation Committee at a recent meeting approved the idea of soil conservation districts being allowed to purchase subscriptions to SOIL CONSERVATION Magazine and to make this a reimbursable item to be paid for from State funds. A number of Michigan districts are placing the magazine in school libraries, in addition to subscribing to it for the use of district directors.

**BIG DOIN'S IN HAWKEYE STATE.**—More than 319,000 Iowa farmers attended soil conservation field days, tours, demonstrations, and plowing contests during 1948. This is more than double the number at similar occasions in 1947.

State and national events drew the largest crowds, accounting for 229,500 of the total. These included the All Iowa Soil Conservation Field Day on the Ben Cole farm in Clarke County, the National Plowing Contest and Soil Conservation Field Day in Dallas County, the National Plow-Built Terrace Contest in Shelby County, the Forage Field Day in Jones County, the Pilot Rock Soil Conservation Field Day and Plowing Contest, and the Conservation Sunday sponsored by the Warren County Soil Conservation District as a follow-up to the field day held in 1947.

Conservation practices which are essential to good land-use programs were demonstrated at all these events.

Twenty-three local or county-wide contour-plowing contests and field days drew 28,500 people. Onlookers were shown the right ways to prepare grass waterways, build terraces, improve pastures, control gullies, establish drainage systems, install contour cultivation, construct diversion ditches, spray weeds, and adjust plows.



**QUESTIONS.**—Michigan soil conservation districts report that one of the most effective drawing cards in getting attendance at annual meetings recently has been the staging of quiz-kid contests. For example, the Leelanau Soil Conservation District drew more than 200 people to its annual meeting with a quiz-kid contest the main event.

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## SOUTHWEST

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**RESCUED AND PUT TO WORK.**—The remaking of a 7,000-acre ranch considered practically worthless during the soil-blowing years of the '30's into a steadily improving range area which can provide grazing for 200 to 300 head of cattle the year around is the accomplishment of H. C. Farber and his son. Oldtimers agree that the Clayton place once was one of the best grass-producing parts of Union County, N. Mex.

About one-fourth of the present ranch had been badly overgrazed by sheep. The rest of it at one time had been owned by a dozen farmers who tried to cultivate this land that once had produced excellent grass. As a result, during the long drought, cultivated fields blew out and onto the grasslands to such an extent that, at the time the Farbers took over, it was practically impossible to determine where field boundaries had been and where there was supposed to be grass.

The first job was to fence the entire ranch so they would have absolute grazing control. This was done prior to 1940. In 1943, the Farbers entered into a cooperative agreement with the Northwestern Soil Conservation District and SCS technicians helped plan a complete soil and water conservation program.

Some 2,000 acres needed to be reseeded, and deferred grazing was necessary on the other 5,000 acres. Several stockwater developments were required.

The job was too big for 1 year, but the Farbers started as soon as their conservation plan was worked out and have been at it ever since. Nearly 1,300 acres now have been planted to various grasses, including the gramas, buffalo, galleta, western wheatgrass, weeping lovegrass and sweetclover.

Crested wheatgrass in pure-stand seedings made in 1945 and 1946 produced an enormous amount of forage in 1948. Not all the seedings resulted in perfect stands, but none was considered a failure and all are continuing to improve under proper use.

The elder Farber says that, based upon his experience of the last 5 years, he considers it very important that sweetclover be included in all grass-seed mixtures in this area of New Mexico. He says the clover not only builds the soil for better grass production, furnishes shade and protection for the young grass, and makes quick cover for protection against wind erosion, but also provides a lot of grazing when the fields are ready for use.

The Farbers have made use of equipment provided by the Northwestern Soil Conservation District in continually adding to the livestock water supply. Springs have been developed, storage facilities at existing wells have been enlarged, and pits are to be constructed in wet-weather lakes to provide permanent water.

Although the job isn't completed, the Farbers have demonstrated that even land that has been misused to the extent that it was considered practically worthless can be made productive again under proper management.

Through the years of change, conservative grazing has been followed annually. Fields sown to grass were protected, as were sand dune areas. Today, the vegetative cover on the ranch is far from being excellent, but when it is considered that 7,000 acres of practically worthless land now supply good grazing, it can be realized that a near miracle has been accomplished. Land can be productive and profitable when used according to its capabilities.

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**WHOLE FARM TILTED.**—Dr. W. M. Trimble didn't have any idea that one corner of his 95-acre farm was 8 feet higher than the far corner diagonally across. Nor did Lou Groehler suspect that he was keeping up a mile of worthless irrigation ditch on his 80 acres.

Surveying instruments reveal surprising things about land that has been in cultivation 60 or 70 years. But farmers act fast when they know how much they're losing in wasted water and less-than-maximum production, according to Dave Hulet, district conservationist at Chandler, Ariz.

Trimble and Groehler are supervisors of the Mesa Soil Conservation District, which was organized in 1946 and covers a continuous block of 35,000 acres of the oldest farms in Salt River Valley.

Everybody had assumed that the Trimble place, east on Mesa on the Apache Trail, was as flat as it looked. When an SCS surveyor plotted its differences in elevation and contour, Trimble got busy. All except a 20-acre citrus grove now has been land-planed three times. Ultimately all will be contoured and concrete pipe laid for irrigation. In the meanwhile, distribution and penetration of water are much improved and bigger crops are being produced.

Groehler always had irrigated from north to south. His lay-out required 1¾ miles of ditch, which is a lot to maintain. He wondered if he couldn't irrigate to the west. Men with transits came along and told him he could. The fall in that direction was only half as much as to the south, and he could eliminate a full mile of ditch. Groehler acted on the information and now is making big savings in labor and water.

Hulet reports that 1,786 acres in the Mesa District already have been leveled, and that 500 more have been staked for leveling. Irrigation systems for 2,363 acres have been rearranged and 1,321 concrete structures have been installed. Crop residue management is another practice getting a lot of attention in this district.

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**BETTER RANGE AHEAD.**—A complete range conservation program has been planned for the 9,400-acre Settlement Canyon watershed in the Grantsville Soil Conservation District near Tooele, Utah.

In a severely depleted condition last fall, the range was found noticeably short of good pasturage when a survey was made by stockmen and SCS range specialists.



Livestock grazing will be reduced 65 percent and fences will be erected to keep stock off one area to build up its vegetation. Additional water developments are planned for better distribution of grazing. Where native grasses have been depleted, reseeding will be done. The reseeded areas will be protected until the plants are mature enough for grazing.

Tom Nix of Tooele, representing the sheep interests, and Allen Warr of Erda, president of the Settlement Canyon Land and Livestock Association, have approved the conservation project.

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**NEW GRASSES UNDER TEST.**—Farmers and ranchers of Weld County, Colo., this year will have an opportunity to get acquainted with some grasses which have not been widely grown in this area.

Lloyd A. Acott, SCS technician assisting the West Greeley Soil Conservation District, and George James, county agent, have planted the grasses on Marshall Anderson's place near Greeley. Acott and James will arrange for interested farmers and ranchers to inspect the demonstration plot from time to time.

Included are green needle, sand love, stiff-hair wheatgrass, East Indies bluestem, intermediate wheatgrass, Russian wild rye, tall wheatgrass, Ladino clover, orchard grass, smooth brome, and meadow fescue.

While the last three are standard pasture grasses, Ladino clover has been used in irrigated pasture mixtures in only a few sections of Colorado.

Stiff-hair wheatgrass and intermediate wheatgrass are expected to compare favorably with crested wheatgrass for dry-land ranges. Sand love has shown up well on sandy land.

Acott said tall wheatgrass has been found adapted to wet, seepy areas where other grasses have not done well, and later may be used in wet areas in Greeley County.

Sand love, East Indies bluestem, Russian wild rye and intermediate and tall wheatgrasses are range-land varieties not heretofore used to any great extent in this area.

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## WESTERN GULF

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**EVENTFUL DECADE.**—The Saline Soil Conservation District of northwest Louisiana has been in business 10 years. Recently it held an anniversary meeting to take

a look backward and to peer into the future. About 250 farmers and businessmen came to the meeting.

Ruel D. Conly, chairman of the board of supervisors since the district was organized, pointed out that in the 10 years there had been great changes in the use and treatment of the land in the district. Much conservation work has been accomplished, much more remains to be done, he emphasized. He cited these figures:

Cover crops are being grown on 37 percent of the acres requiring this conservation practice; 9 percent of the drainage job has been done; 24 percent of the 183,201 acres in pastures have been improved, 20 percent of the improved acreage having been seeded to grasses and legumes; 26 percent of the needed 700 stock ponds have been built; 12 percent of the 318,576 acres in farm woodlands have been placed under conservation management; contouring has been done on 14 percent of the 196,097 acres in need of it, terracing on 10 percent.

Sylvan Nelkin, dean of the school of agriculture, Northwestern State College, Natchitoches, La., and secretary of the Louisiana Association of Soil Conservation Districts, said: "With the coming of soil conservation districts, we approached the erosion problem for the first time in a democratic way."

Homer H. Harris, Sr., president of the Red River Valley Association, told how the aims of his association tied in with those of the soil conservation districts.

Dr. N. A. Woychuk, superintendent of the Bible Memory Association, Inc., at whose camp near Ringgold the meeting was held, compared soil conservationists with the workers of his association. Both are sowing seeds from which good grows, he said.

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**UNDERWRITES SUBSCRIPTIONS.**—A bank in Idabel, Okla., is sending 25 subscriptions to cooperators of the Little River Soil Conservation District this year. A letter went with the first copy of the magazine congratulating the farmers on progress made in conserving soil and water.

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**KEEPING IN TOUCH.**—The board of supervisors of the Comanche County Soil Conservation District in Oklahoma has adopted the policy of mailing to cooperators bulletins and clippings from magazines containing useful conservation information. The purpose is to help speed up the application of the conservation program.

With the material is mailed a letter that contains timely news of district activities. The supervisors find that this policy helps to keep them in closer touch with the cooperators.

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**SEEDING BY PLANE.**—Seeding of native grass by airplane was tried out recently on a half section of a Land Utilization Project near Dalhart, Tex. The area was too rough to seed by ordinary means.

This method of planting native grass seed has been used also in the Grady County, Stephens County, and



South Caddo County Soil Conservation Districts of Oklahoma. It was found there that planes can seed 100 acres per hour.

**SPRIG PLANTERS.**—Districts in Oklahoma bought 30 Bermuda grass-sprig planters for 1949 spring planting. These tractor-drawn machines can plant 2 to 3 acres per hour. They are equipped with fertilizer attachments.

The sprig planters were designed and developed by SCS technicians and made by machine shops at Chickasha and Tulsa.

**SUPPORT FOR SERMON.**—The Reverend A. K. Marney of the First Methodist Church in DeLeon, Tex., recently preached his second sermon on the soil and man's obligation to use it properly.

He introduced something new this time. He delivered his sermon with rostrum flanked with field plants that have become important to the local soil conservation program.

Prominently displayed were hairy vetch and Dixie Wonderpeas which have attained popularity as winter cover and soil-improving crops in the Upper Leon Soil Conservation District, as well as elsewhere in the sandy peanut-producing lands of the Cross Timbers. There, too, were green wheat and rye, usually planted with vetch to keep it upright until seed harvest time.

"Pastors must be deeply concerned," the Reverend Marney told his congregation, "when so many of them in the Methodist Church are supplying pastorates that can barely pay their way because the soil about them has been carelessly used. No great civilization can be maintained unless its members give protection to that which God has created."



John O. Simpson, work unit conservationist, places a cluster of Dixie wonderpeas at the chancel as Rev. Mr. Marney looks on approvingly.

## NORTHERN GREAT PLAINS

**YOU HAVE TO START SOMEWHERE.**—Substantial increases in yields from contour farming were the stepping-stones to his desire for a complete conservation plan that includes terraces "and everything," according to William Roberts, who farms east of Gordon, Nebr., with his sons, Jack and Bud. He cooperates with the Cherry County Soil Conservation District.

The Roberts land, near the western edge of Cherry County, includes hardland soils that are farmed and sandy soils and sandhills that are grazed. Contour farming started 3 years ago, the acreage being increased each year until now there are 200 acres on the contour. The moisture conserved showed up in increased yields.

Under the expanded plan, two terraces now have been built with tractor and plow. Intermediate wheatgrass has been seeded as a seed plot. Further development of the sprinkler irrigation system, water-spreading, more planting of alfalfa, grass and trees, and improvement of pastures are other phases on which work is being done. One good thing has led to others.

**WEATHERED STORM.**—A 23-acre meadow where sagebrush grew just a year before made weathering the January blizzard both easier and much less expensive to Dan Nolan, Lingle, Wyo., a cooperator with the Lingle-Fort Laramie Soil Conservation District.

"The hay this meadow produced," he said, "gave me a good supply of feed even though the 1948 native hay crop was below normal because of the dry season. With hay selling at \$40 a ton, you can get some idea of the worth of that meadow to me."

The meadow is irrigated with flood waters diverted from Rawhide Creek. It was developed as part of Nolan's conservation plan. The water is taken from the diversion dam to the meadow through a canal a mile and a half long.

Little was produced from that land in previous years, Nolan says, but the conservation survey showed it to be suitable to hay production if it were developed and watered. It was leveled and seeded to alfalfa in 1947.

Last year that meadow yielded 3 tons of alfalfa hay per acre. This feed, stacked where it could be distributed to the stock, made Nolan independent of outside feed supplies.

"I had hay when the roads were closed and I needed it," says Nolan. "I didn't lose a cow."

Nolan's conservation plan calls for turning other sagebrush land into hay meadows. This will be done in accordance with the conservation survey that shows what each part of the ranch is capable of. But he hopes not to have to rely on flood waters. He wants to develop a pump-irrigation well.

**CONSERVATION AS A CARPENTER.**—Extra earnings from conservaion farming have already built a good barn for Ross Howen, Tabor, S. Dak., a cooperator with the Scotland Soil Conservation District.



"Gullying and other erosion has been checked, water is saved and the soil has become more mellow," Howen notes. "Crop production has increased fully a third."

Howen's cropland is terraced, contour-farmed, and stubble-mulched. Grassed waterways have been established. Land not suited for cultivation is now in hay and pasture. Dams have been built, and a windbreak planted.

"The soil was hard and tight when I began work on this conservation plan," Howen said. "There was lots of washing, and crops were damaged. Gullies were growing. Yields were relatively low.

"Holding water on the land and getting rid of the excess through grassed waterways checked the erosion. And getting organic matter in the soil by stubble-mulch tillage has made the soil more mellow, so that it can take in water better and is easier to farm.

"The farm is getting better all the time. I've already got enough more income from conservation farming to build a fine new barn."

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**OUT WHERE THE WINDS BLOW.**—Floyd Vaughan of Rolette, N. Dak., signed up with the Rolette County Soil Conservation District and in 1942 began work on his farm conservation plan. His land was damaged by wind erosion and suffering from lack of water. Crop yields were low and feed production scanty.

But a miracle has come through following his farm plan. Vaughan grows most of his crops in wind-strips, uses stubble-mulch tillage, includes grass and alfalfa in his rotation scheme. He has a stockwater dugout and a field windbreak. Another dugout is planned for 1950 and an additional field shelterbelt for this spring.

Vaughan thinks that conservation measures kept him from losing his farm. His crop yields are up over 50 percent. He is getting more organic matter incorporated in the soil. There's hardly any damage from blowing. His livestock has plenty of water. Operations are balanced. Of the windbreaks, Vaughan says, "I wouldn't take \$1,500 for them. Why, this year we got somewhere between 300 and 400 pounds of sandcherries and several hundred pounds of plums from the windbreak. We took all we could use, and neighbors gathered a lot more."

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**WHY WASTE FERTILIZER?**—Fred P. Chilen finds that fertilizing sloping land doesn't do much good unless other conservation measures also are used. Chilen farms 291 acres near Miltonvale, Kans., as a cooperator with the Cloud County Soil Conservation District.

Total production increased by 50 percent after Chilen began work on his complete farm conservation plan 8 years ago. On parts of the farm, the gain is much more. "I hauled manure regularly to one 30-acre field for 25 years before I began on the conservation plan, but it didn't do much good," Chilen notes. "Yields stayed low. There were crop wash-outs, stands were thin, and most of the manure went with the soil and runoff. The field was rutted with a lot of little gullies.

"That was the first field I terraced under my farm-conservation plan. It was seeded to alfalfa as part of

the rotation. Then, in 1946 it was planted to wheat and produced twice the former yield. It was in wheat again in 1947 and yields were still higher.

"In the spring of 1948, the field was seeded to certified Norkan sorgho on the contour and it yielded 42 bushels of seed per acre, with the plants growing 8 to 9 feet tall. Just before the crop was up, a 2¼-inch rain fell in half an hour, but it did no damage. Some other farmers I know had to replant. Their crops were late and the yields small."

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## PACIFIC

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**1949 CONFERENCE.**—The Honey and Pollen Plants Committee of the American Beekeeping Federation will hold its annual meeting at the University of Washington, July 12, 13, 14, and probably 15, 1949.

This conference is for agronomists, soil conservationists, horticulturists, legume- and vegetable-seed producers, range-management specialists, railway agricultural agents, highway and forestry personnel, botanists, pharmacists, wildlife conservationists, beekeepers, extension specialists, and other interested groups. Each group will be represented by a specialist of national standing and a discussion period will follow each address.

There will be a small registration fee to cover expenses.

Inexpensive campus housing will be available, also housing at hotels.

Committee chairman is Dr. S. W. Edgecombe, head, Department of Horticulture, Utah State Agricultural College, Logan, Utah. The program is being prepared by Dr. H. A. Scullen, apiculturist, Oregon State College, Corvallis, Oreg., and Herman F. Menke, apiculturist, Washington State College, Pullman, Wash.

For information address Dr. A. M. Walrath, local arrangements chairman, 590 Olive Way, Seattle 1, Wash.

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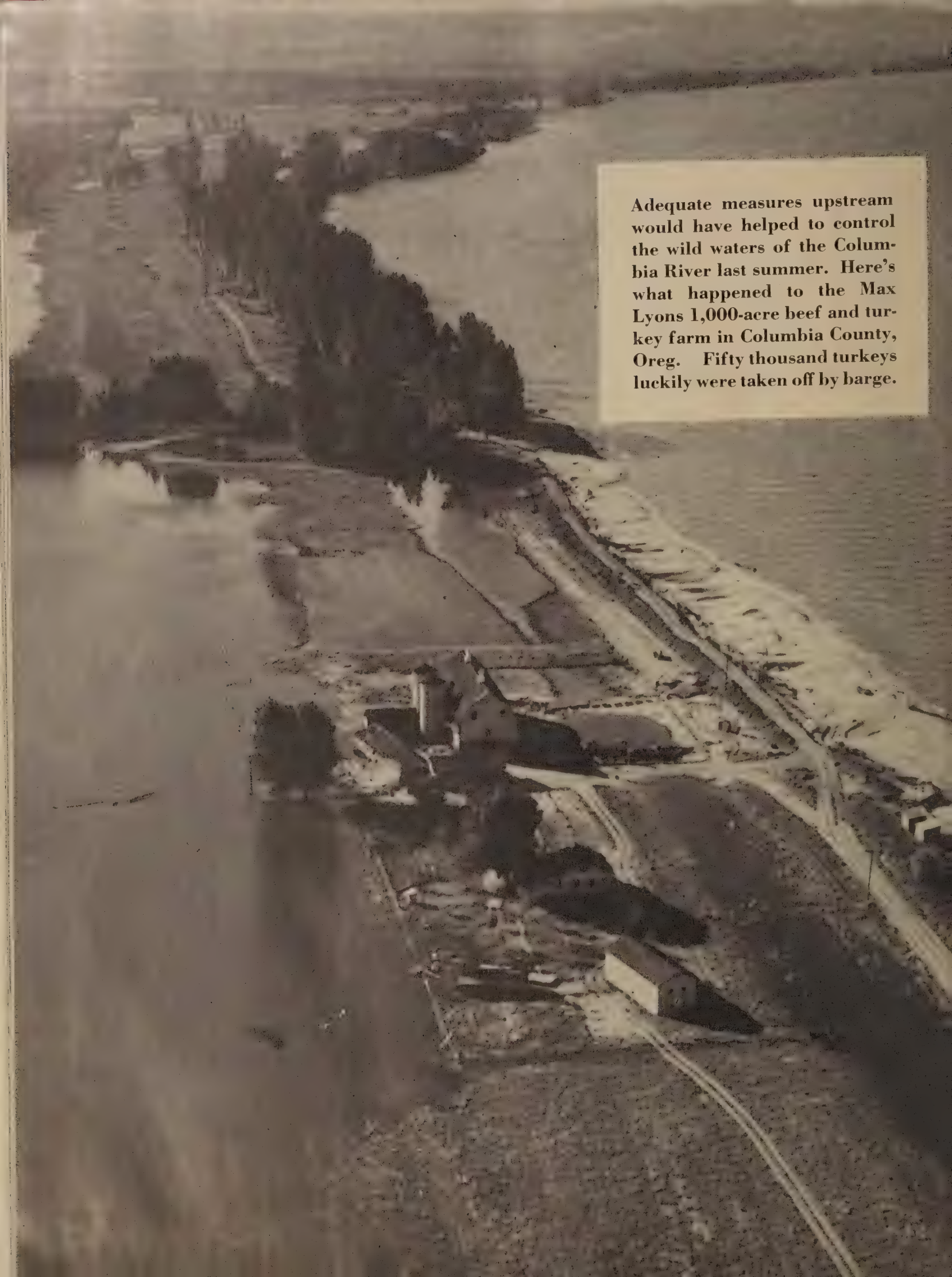
**SCHOOL FRONTIERS.**—The public schools of Pullman and Colfax, Wash., in the heart of the famed Palouse section of the Pacific Northwest, are asking soil conservation district supervisors and local farmers to suggest better ways of teaching soil conservation in the elementary grades.

Superintendent Louis Bruno, of Pullman, started the idea when he called together more than 100 farmers, their wives, teachers, district supervisors, businessmen, and professional soil conservationists and told them he wanted "grass roots" advice on how to get soil conservation across to youngsters in grades from first through twelfth. A similar meeting was held at nearby Colfax a few days later.

Out of the meetings came many concrete proposals. Plans were made to incorporate soil conservation in such courses as science, reading, English composition, and geography at all levels of instruction.

A later series of meetings was held with faculty members and technicians of SCS to work out detailed teaching methods.



An aerial photograph showing a large area of land, likely a farm, that has been inundated with floodwater. The water is a murky, brownish-grey color. In the foreground, there are several large, dark, rectangular structures, possibly barns or silos, partially submerged. A road or railway line runs diagonally across the middle of the image. In the background, a river flows, and a line of trees separates the flooded area from the river. The overall scene depicts the aftermath of a significant flood event.

Adequate measures upstream would have helped to control the wild waters of the Columbia River last summer. Here's what happened to the Max Lyons 1,000-acre beef and turkey farm in Columbia County, Oreg. Fifty thousand turkeys luckily were taken off by barge.







